THE COMPUTER AND THE LADYBUG (p. 22)

44 ceres

700 LIRE FAO REVIEW ON DEVELOPMENT / MARCH - APRIL 1975

WOMEN: A LONG-SILENT MAJORITY

Kartar Singh lives near Coromandel, India. So do we. And we very much affect each other's lives. Kartar is a farmer. IMC is a partner in the Indian-owned Coromandel fertilizer plant. We helped to plan, finance and build it, and have shared in the management. As a result, Coromandel is an important source of fertilizer for farmers such as Kartar, and an important step toward making India self-sufficient in food production. IMC will continue to seek new ways of increasing fertilizer availability to meet growing world needs. This will be done through new investments and ventures in a continuing spirit of international cooperation. Write for our annual report.

IMC

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FAO REVIEW ON DEVELOPMENT

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Although, at the beginning of the nineteenth century, a socialist visionary declared, " The extent to which any society has advanced can be measured by the degree of freedom enjoyed by its women," those who were struggling for progress in this direction soon realized that the feminine question was an extremely thorny one. In criticizing a condition that she had always accepted as her destiny, woman has acquired, or rather won, her place in history: she cannot be ignored anymore. And man's new partners seem very angry . . . Why? Well, because it has become as clear as day that throughout the world — give or take a little here and there — woman is at worst the lowest of the low and at best an equal obliged to make men forgive her for her liberation. It is extremely unusual for her to be really free, in other words, mistress of herself, of her own body — in short, autonomous. " Woman is a bag," proclaims the Bambara proverb, " anything can come out of her." Well said. There is distrust in that anything, *but perhaps also reverence and even envy. What is happening inside this mysterious being, is she going to give us a child this year? The fields she sows and weeds, will they nourish us this season? Often venerated in a religious way, woman is nevertheless tricked in real life: whatever she is — housewife, agricultural worker (most often an unpaid family help), health services employee or teacher — she can't have a job unless it is certain that she will gain no prestige or power from it, and she can't enter any profession until it has sunk so low that men are no longer interested in it. So it is fair to say that she is, in a way, socially invisible. In the Third World, particularly in Africa, it has become more and more apparent that women occupy an important place in food production: they feed the husband and the children. However, there are no agricultural extension projects for them. Agricultural modernization ignores them; they don't even succeed in marketing their own produce, which would give them a certain autonomy. Far from getting rich, they get poorer. In most of the Third World countries agrarian reform, the green revolution and credit programmes have shown up the sex bias of development. Let us hope that International Women's Year will not be just a blue-stockings' emergency meeting, but that the exchanges of views, the debates and the inevitable antagonisms will in their turn provoke reactions at all responsible levels. There is little chance that, when the fateful year is over, women will let themselves be forgotten. They will act in their own name, in the first person — they have already started doing so.*

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The nurturing forest

Foresters have demonstrated that forests regulate water supplies and thereby reduce the incidence of floods and droughts. Because of the many-storeyed nature of the forest and the accumulated litter deposits on the forest floor, rain is intercepted at many levels on its way to the ground, its energy dissipated, and its impact on the soil reduced. Thus, there is little or no compaction of the soil, its pore spaces do not become clogged, and its infiltration capacity is not diminished as happens when the land is bare.

Forests also actively assist infiltration. The organic matter on the forest floor (leaves, twigs, fruit, branches, etc.) is first oxidized and hydrolized, then decomposed by fungi and transported into deeper layers by the soil fauna. The combined effect of the chemical and biological action is the conversion of the litter into humus, and humus improves the soil, increases its permeability and aids infiltration.

We know that if most or all of the rain that falls is permitted to run off the surface of the land, the consequences may be far-reaching: drainage systems may not accommodate all the water, and this may lead to severe flooding; water moving rapidly over the surface removes soil material and accelerates erosion; soil materials eventually fill reservoirs, making rivers and streams shallow, and cover farmlands.

On the other hand, forests reduce the possibility of droughts by reducing the overland flow during the rainy season and releasing it more slowly to the springs that feed the streams in the dry season.

Finally, when used as windbreaks and shelterbelts, forests protect the soils, improve their porosity and water-holding capacity and activate microorganisms, thus increasing the effectiveness of certain fertilizers. Indeed, there is considerable evidence that higher yields are obtained with the help of shelterbelts, particularly in areas where growing conditions are difficult.

Obviously, any programme to improve food production should include the reforestation of critical watersheds. This need not be too costly an exercise. Growing forest trees quickly in conjunction with food crops is known as agri-silviculture. This technique promises to provide man with food, with protection for his crops and with wood for industrial development.

Yet, in none of the resolutions passed or recommendations made at the recently concluded World Food Conference was the word forestry *mentioned; nor was any reference made to the evils of unscientific deforestation, and the necessity of reforesting many of the world's areas in order to assist in food production.*

It is no coincidence that the forests of all the countries with major crop failures in recent years due to droughts or floods — Bangladesh, Ethiopia, India, Pakistan, the Sahel countries — had been razed to the ground and had not been replaced by woody vegetational cover.

Canadians, English and Germans to the rescue

• Canada has announced a new emergency food aid (to the value of $71.5 million) for the countries most severely affected by hunger. Of this total $51.4 million fulfil the pledge made by Ottawa at the time of the World Food Conference. This aid is mainly for the Sahelian countries, Pakistan, Tanzania and Bangladesh. The latter will also receive $20 million worth of food (including transport costs), which will bring the total sum spent in one year by Canada on aid to Bangladesh to $60 million.

• The United Kingdom has undertaken, under the Food Aid Convention, to provide WFP with 44 600 tons of wheat, worth $8 million at current market prices. $1.5 million in cash will be added to this to help cover transportation costs. This aid should not be confused with the United Kingdom's contribution to WFP for the period 1975/76, which amounts to $7.7 million ($5.1 million in commodities, mainly powdered milk and eggs, and $2.6 million in cash).

• The Federal Republic of Germany has just given FAO the equivalent of $5.4 million for recovery operations in Bangladesh and four African countries. Most of this money will be spent on food grains to be distributed in four countries of the Sahelian zone still suffering the effects of the drought: Niger, Mali, Mauritania and Upper Volta. About $600 000 will be used to get agricultural production on its feet again in Bangladesh.

Billions for the Tigris

Iraq has announced a $10 billion agricultural development programme over the next ten years, which includes construction of a dam on the river Tigris to store 10 billion tons of water to irrigate 400 000 hectares.

The hectares of independence

According to *Le Monde*, Japan is beginning to worry about the decline of its agriculture, due to the industrialization policy followed for a certain number of years. The agricultural population, which dropped from 30 million in 1955 to less than 8 million in 1973, cultivated only 5600000 hectares that year as against more than 6 millions in 1961.

The World Food Council

Officially created by the United Nations General Assembly in December 1974 on the recommendation of the World Food Conference, the World Food Council is beginning to take shape. Operating directly under the authority of the UN Secretary-General, it now has John A. Hannah (formerly Directór of USAID) as Executive Director, Jacqueline Walsh as Personal Assistant to the Executive Director, Sartaj Aziz (Director of FAO's Commodities and Trade Division) and Nathan Koffsky as Deputy Executive Directors, a secretariat and offices provided by FAO in Rome. All that remains is for it to start work on directing the great joint offensive of governments and UN agencies against hunger and all the aspects of the world's food problem.

Moreover Japan, which in 1960 depended on external sources for only 10 percent of its total expenditure on food, depended on them for 28 percent in 1972. Expressed in calories, this dependence would represent about 50 percent of its food needs.

Urgent food aid for the victims

— of the earthquake in Pakistan, which, according to estimates, killed 5200 people, injured 15000 and rendered 70000 homeless. An immediate grant of $569200 was made by WFP, which authorized the Pakistan Government to draw from WFP stocks held in the country 2520 tons of wheat, 170 tons of vegetable oil and 94.5 tons of sugar. Pakistan will also receive 8000 metric tons of wheat at a total cost of $1885000, including transportation. This will go to the 250000 people reportedly facing starvation in the Tharparkar district of Sind Province, which was hardest hit by the failure of monsoon rains.

— of the drought in Somalia, whose consequences could be aggravated still further by poor maize harvests (the winter harvest is not expected to yield more than one fifth of the average season's output). WFP is shipping wheat flour to the value of $1.9 million for free distribution to 210000 people for a period of three months. This grant, the third made to Somalia since November 1974, raises to $4 million the total value of emergency food aid to this country since the current drought.

— of displacement in Mozambique, where 100000 adults and 200000 children are returning to their homes after their internment by the Portuguese authorities or their exile in Rhodesia or Malawi during the hostilities. To enable them to live until they can produce their own food again, WFP is distributing rations of maize, pulses and powdered milk for a value of $2.2 million.

— of the war in the Khmer Republic, where more than 1 million people fleeing the fighting have taken refuge in and around the town of Phnom Penh. The Canadian International Development Agency has distributed $500000 worth of powered milk and medical supplies.

The haves and the have-nots

Average daily food supplies[1] per caput

		Developed market economies	Western Europe	North America	Oceania	Eastern Europe and USSR	Total developed countries	Developing market economies[2]	Africa	Far East	Latin America	Near East	Asian centrally planned economies	Total developing countries	World
Population	1961	658	329	202	13	317	**975**	1376	220	802	219	134	686	**2062**	3037
million	1970	725	356	227	15	349	**1074**	1751	273	1020	283	171	810	**2561**	3635
Dietary energy	1961	2950	3020	3110	3210	2990	**2960**	2130	2120	2050	2410	2200	2010	**2100**	2380
kilocalories per caput	1970	3050	3100	3260	3100	3250	**3110**	2180	2160	2080	2510	2280	2360	**2240**	2500
Dietary energy	1961		116	118	118	121	116	**116**	93	92	92	100	89	96	**91**	100
Percentage of requirements	1970		120	122	123	117	126	**122**	95	92	94	105	93	100	**97**	100
Protein	1961	87.5	89.3	92.3	92.7	85.5	**87.0**	55.1	55.7	51.3	63.7	62.3	54.7	**54.9**	65.2
grammes per caput	1970	91.2	92.0	97.3	101.4	98.5	**93.6**	55.4	56.3	51.1	65.0	63.7	63.0	**57.7**	68.4

[1]Food available at the retail level after allowance for waste. — [2]Including countries in other regions not specified.
Source: FAO

Maize that's too soft

Maize is a basic food in Central America. For this reason, no effort is spared to increase its nutritive value. About ten years ago, scientists developed a grain, Opaco 2, that seemed to meet all the requirements. Unfortunately, experience has proved it to be too soft for milling. Now they have produced a variety of maize with the same qualities, which is claimed to have the required millability.

Proteins and whey

Single-cell proteins are always in fashion, if not for human consumption, then at least for farm animals. At the end of 1974, production capacity was 318000 tons a year, mainly in the industrialized countries (U.S.S.R., United Kingdom, France). At the same time, factories planned or under construction represented a capacity of 780000 tons a year. Of this total of 1098000 tons, 926000 (84 percent) are produced from hydrocarbons. However, several countries (United States, Canada, United Kingdom) are at present carrying out research on the manufacture of protein from other substances: wastes from wood pulp, cellulose and sugar; methane gas, methanol, carobs, molasses, whey....

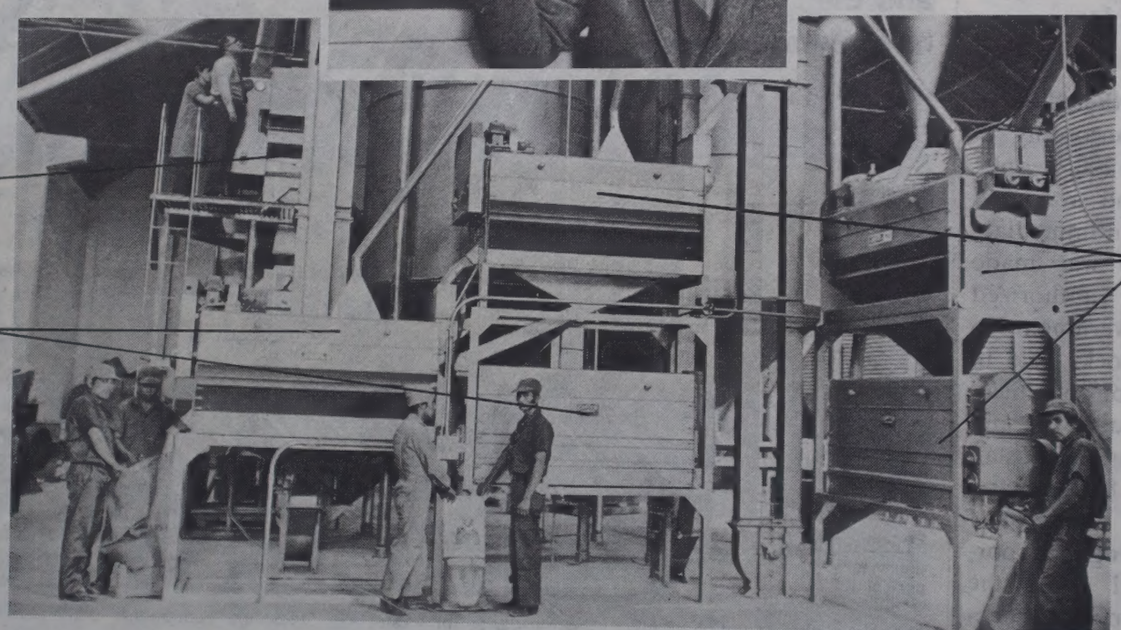
Food grains: the tithe

Between 1 April and 31 December 1974, India had to import 5.55 million tons of food grains, her principal supplier being the United States with 3.78 million tons (*Times of India*). According to *The Financial Express* of Delhi, the Government anticipates that it

Hybrid Seed Corn Processing:

HART-CARTER DESIGNS, EQUIPS CENTRAL AMERICA'S BIGGEST PLANT.

Hans Rogozinski expresses approval of the Hart-Carter equipment at his Guatemala City plant.



Located in Guatemala City, the Hybrid seed corn plant of Hans Rogozinski is the largest and most modern facility of its kind in Central America. A turnkey operation, designed and equipped by Hart-Carter, the plant can process 135,000 pounds per day, making one grade of rounds and three of flats.

Hart-Carter equipment at the Rogozinski plant includes three #2 Precision Graders for thickness and width separation, two #3 Uni-Flo Separators for length separation, and a 24-inch Superior Fractionating Aspirator for cleaning. Hart-Carter did more than supply equipment. In conjunction with the McNair Seed Company, we designed the flow. We provided continuing technical assistance. In the fall of 1971, after the equipment was installed, we sent a technician to Guatemala to inspect the operation and make sure the Hart-Carter equipment was performing properly.

In Hans Rogozinski's words, "The whole plant is doing fine." He's grading corn to U.S. standards for companies located in the United States and Central America. If you want to know what Hart-Carter equipment and technical assistance can do for you, send us the coupon below.

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will have to buy at least 6 million tons this year. In addition, *The Patriot*, also of Delhi, following the conclusions of a group of experts, estimates that at least 10 percent of Indian grain transported is lost in transit. The volume lost might well amount to some 2 million tons a year.

Jute prices drop: rice is being produced

It is foreseen that jute production will decrease by about 30 percent (2930 million tons) during the 1974/75 season, as a result of poorer harvests in the major producing countries. These harvest in turn reflect the increasing tendency of most producers to abandon jute cultivation and to switch to more profitable crops, such as rice.

In Bangladesh, for example, the jute areas under cultivation have been reduced by about one third or even more. In India, farmers are turning more and more to food crops, and much the same thing is happening in Thailand and Burma.

FERTILIZER NEWS

China is building

Like the rest of the world, China needs more fertilizers. It has partially succeeded in remedying the deficiency by the use of compost, usually made of rice straw and human or animal wastes. But this is not enough. China is now building ten big nitrogen fertilizer plants.

Organic fertilizer to alleviate shortages

According to a group of experts who met in Rome in December 1974, it is particularly important for the developing countries to "appreciate the enormous importance of organic materials and employ them for their agricultural needs, using them in the most effective way in conjunction with artificial fertilizers."

The group invited the developing countries to make greater use of leguminous plants such as groundnuts, cowpeas, mung beans and grasses to increase the yield from their land.

Grain crops and fodder, which fix the nitrogen in the atmosphere, could be grown on the same plots as sugarcane, cotton or pigeon pea during the rotation of these crops, provided they are cultivated in well spaced rows.

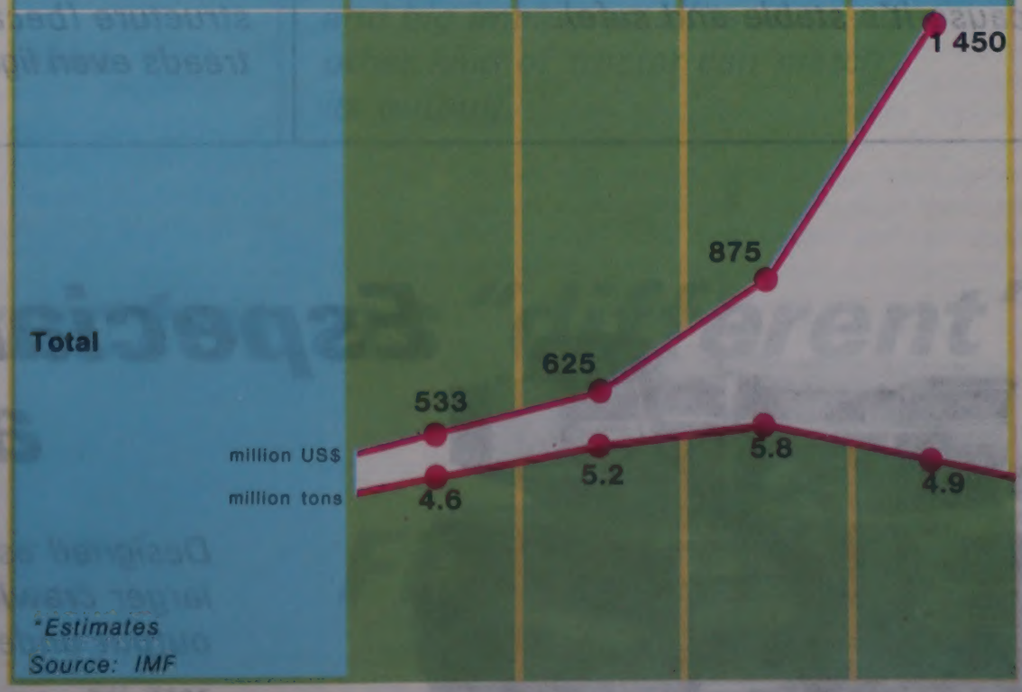
According to a document prepared during the World Food Conference, natural fertilizers available in the developing countries during 1970/71 contained from 7 to 8 times more nutritive elements than all the artificial fertilizers used by these countries during that same year.

Appropriate steps should be taken to avoid losses occurring during the gathering, treatment, storage, transportation and spreading of animal manure. It would also be desirable to intensify the use of vegetal manure and to reconsider the treatment of municipal wastes.

The cost of scarcity

Import of manufactured fertilizers by developing countries

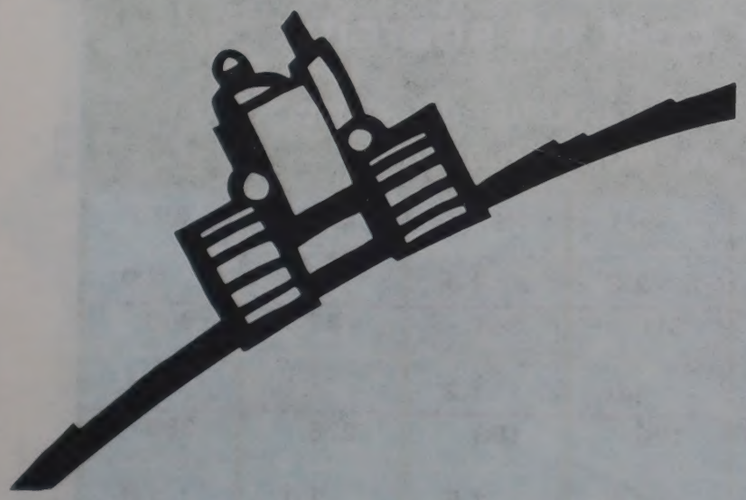
		1971	1972*	1973*	1974*
Nitrogen	million tons	2.3	2.5	2.6	2.0
	million US$	311	341	462	900
Phosphate	million tons	1.0	1.2	1.4	1.1
	million US$	126	183	275	380
Potash	million tons	1.3	1.5	1.8	1.8
	million US$	96	101	138	170



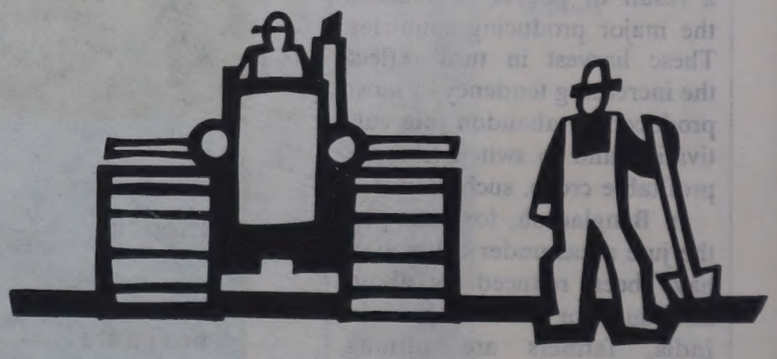
Fiat Tractors: 2-wheel drive

a crawler

may often



It's best *on hilly ground (because it's stable and safe).*



It's best *at conserving the soil structure (because it treads even lighter than a man).*

Especially if it is a

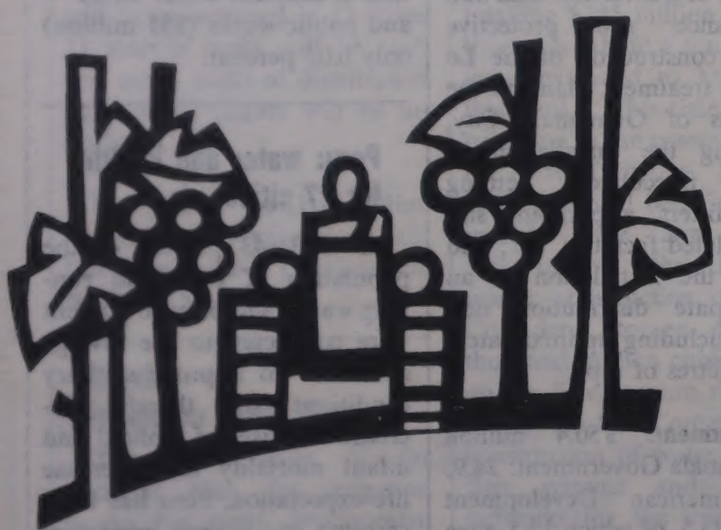
as the new

Designed as a profitable alternative to th larger crawler tractors (for high output under average job conditions).

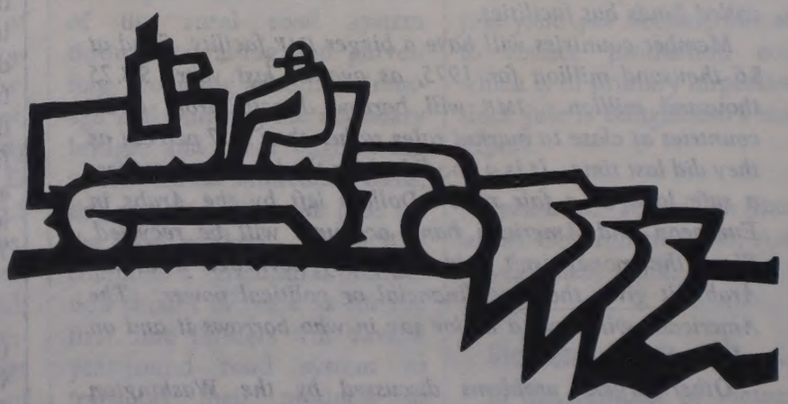
What's new *about it is its low weight-to-power ratio.*

-wheel drive, crawler tractors

tractor be best



It's best *where space is limited, as in vineyards and orchards (because it's highly manoeuvrable).*



***It's best** for deep cultivation and big implements (because no other kind of tractor can match its output).*

crawler tractor as "different" Fiat 805C

***he advantages:** more hp per kg of eight, faster working speeds and eater tractive effort.*

***Vhat's not new:** is common to all Fiat actors - strength, reliability, sy maintenance.*

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FIAT

Turin-Italy

The wizards of Washington

The financial ministers who met in Washington in January 1975 to decide International Monetary Fund (IMF) policy solved the most urgent problem — the recycling of petrodollars to industrialized countries on the verge of bankruptcy — and postponed all the others until their next meeting in June.

Something had to be done at once to deal with the oil deficits of the weaker industrialized nations. Unless they were lent money to pay for their oil imports, their industries would have ground to a halt for lack of fuel. A world recession could have followed. The issue at stake in Washington was not where the money was coming from (everyone knows it's OPEC money), but who was going to lend it and how.

Two international funds were agreed upon, to which deficit nations can apply when they run out of dollars to pay for their oil imports. To make it all more gentle, these are not called funds but facilities.

Member countries will have a bigger IMF facility, fixed at $6 thousand million for 1975, as against last year's $3.75 thousand million. IMF will borrow directly from OPEC countries at close to market rates rather than at 7 percent as they did last time. It is a good deal for the lending countries: a safe loan at a fair rate. Dollars left by the Arabs in European and American bank accounts will be recycled. Since the money isn't being officially borrowed from the Arabs, it gives them no financial or political power. The Americans will have a major say in who borrows it and on what terms.

Other urgent problems discussed by the Washington wizards remained unsolved and will be talked over again in June. The meetings showed that the Western industrialized world is reluctant to concede the Arabs a bigger role in international decision making. In return for their $6 thousand million, they have been allowed to up their IMF subscription and with it their voting rights from 5 to 10 percent. This of course bears no relation to their real financial power. An Iranian minister has said that their share should be 30 percent. The discussion on quotas, i.e. the subscriptions from member states, which need increasing, was also unsatisfactory. No one could agree on a figure for the overall increase, and the question of the role of gold in IMF quota payments was left up in the air.

These disagreements will not break the system but they help to undermine the authority and operative efficiency of an important international body at a time when the need for world monetary cooperation is every day more obvious. If IMF is without cash or if its membership structure fails to mirror economic realities, it will lose power and credibility. IMF is already treated with suspicion by some countries and many of the poorer developing nations. If its procedures continue to be blocked by the sectional interests of this or that great power, it cannot fulfil the role for which it was created.

Guatemala: 83 million litres

In Guatemala, as everywhere else, there is a water problem. There, the national project for water supply is called Xayá-Pixcayá, and it will provide a flow of 83 million litres of water daily to Guatemala City by 1977. The project includes the following works: collection of the waters of the Xayá river and their transmission to the Balanyá river (a tributary of the Pixcayá) through the construction of a diversion dam and conveyance and protective works; construction of the Lo de Coy treatment plant on the outskirts of Guatemala City, including the installation of dosers, flocculators, settling tanks, filters, a pumping station, related facilities, etc.; and finally the installation of an appropriate distribution network, including approximately 7620 metres of pipe.

Investment: $50.4 million (Guatemala Government: 24.9; Inter-American Development Bank: 25.5, of which 15.5 were extended in 1969).

El Salvador: emphasis on agriculture

Departing from what has seemed to be a trend in the Latin American countries to give the largest proportionate increases to education, El Salvador stresses agriculture in its 1975 budget. While not representing the largest item of the budget (which is still education with $60 million), this heading however benefits from the greatest increase, up to a sizable 83.6 percent. From a little over $16.3 million, it rises this year to $30 million. In comparison, public health gets 40 percent more, education 14.2 percent more — taking inflation into account, this probably represents an effective reduction in constant dollar terms — and public works ($33 million) only 0.02 percent.

Peru: water and health for 27 cities

In 1973, 43 percent of the population of Peru had running water, and only 20 percent were connected to the sewage systems. To improve sanitary conditions and thereby decrease the cases of typhoid and infant mortality and increase life expectation, Peru has been carrying out a very important project. Its third stage, presently under way, envisages the improvement of the potable water systems and the construction of a sewage system in 27 medium-sized cities, representing no less than 20 percent of the country's urban population. For this, 24 water supply

Agricultural credit

A booklet concerned with problems of credit to small farmers may be obtained free of charge from the World Bank in Washington or Paris. The basis of this study is a principle arrived at after thirty years' experience in this field: programmes for large numbers of low-income producers cannot be based on the same rules as those whose aim is to help a small number of large producers. It follows, for example, that a small farmer should be able to borrow money without having to pledge his land. The classic mortgage system excludes those who are not owners of their land and all those who lack certified title to their property.

A field where investment remains strong

	Total expenditure	Percentage distribution					
	126 3	46 5	27.6	3.1	5.1	12.4	5.2
	159 4	40.0	28.2	3.5	3.9	14.8	9.5
	207 4	33.1	30.4	3.0	3.1	15.9	14.3
		United States	USSR	France	United Kingdom	Other developed countries	Third World

Source: SIPRI

systems will be improved in 20 cities, water treatment plants will be constructed in 13 cities, 21 storage tanks will be built and many miles of distribution lines of all calibre will be installed.

Investment: $61 million (Peruvian Government: 30.5; Inter-American Development Bank: 30.5).

Mexico: irrigation third stage ...

The third stage of the national plan for irrigation works for rural development includes approximately 680 irrigation facilities, which will bring some 60000 ha of land under cultivation and benefit 23000 farm families of limited means. For the best utilization of these new facilities, the project envisages the provision of goods and services necessary for the proper operation of the works and the acquisition of machinery and equipment.

Investment: $97.2 million (Mexican Government: 52.2; Inter-American Development Bank: 45).

... and re-irrigation in the northwest

But this is not all, because Mexico seems to be going all out to solve the irrigation problem. Let us bear in mind, for example, that the IDB has already extended 20 loans totalling $245 million only for irrigation (about a fourth of all loans extended to Mexico by this Bank). This time, it is for irrigation in the coastal plain of the State of Sinaloa. The project, which will benefit approximately 5000 farm families, will include the following works: construction of the El Comedero storage dam (3.5 thousand million cubic metres) on the San Lorenzo river; rectifying the San Lorenzo canal; construction of water distribution systems and drainage networks for the irrigation of 46 634 ha of land on both banks of the San Lorenzo river and the right bank of the Mocorito river; finally, acquisition of machinery and everything necessary for the maintenance of this infrastructure.

Investment: $112.7 million (Mexican Government: 67.2; Inter-American Development Bank; 45.5).

Kenya: on the road to urban markets

In the eastern part of Kenya, rural roads are not up to all-weather standards and cannot be used year-round. Because of this unreliable transportation system, the farmers too often see the loss of the produce destined for sale on urban markets. Thanks to a close cooperation between Kenya and Canada, the situation will improve. The project involves the improvement of 11260 km of the rural road system through regrading and gravelling, providing adequate drainage and building the necessary bridges and other engineering work. On an immediate basis, this project will create jobs for the local workers. When it is completed, agricultural production should increase as for the first time farmers will have a year-round road system to transport their products to markets.

Investment: more than $23.5 million (Kenya Government: more than 10; Canadian International Development Agency: 13.5).

Bangladesh: increasing jute production

Jute production is declining (see *Food and nutrition*). To give it a new start, Bangladesh is launching a project, giving it high priority in the country's Five-Year Plan (1973-78). The project seeks to provide the growers with good quality jute seed in sufficient quantity, estimated requirements being about 1900 tons of certified seed. In line with this objective, research stations, production units and extension services will be established in addition to seed storage warehouses, to build up a buffer stock of 500 tons. The project seeks not only to increase the jute yield per hectare, but also to reduce production costs, which is of primary importance since jute is Bangladesh's main export.

Investment: $12 million (Bangladesh Government: 2.45; Asian Development Bank: 9.55).

Vietnam: water, salt ...

In the Republic of Vietnam, 8220 ha of irrigable land housing 8000 farm families in the Mekong Delta will be the objective of a project designed to eliminate flooding and salinity intrusion, improve surface drainage, irrigation water supply and road access. Flood and salinity control, dikes, major drainage sluices and irrigation pumping plants will help to achieve this result.

Investment: $12.7 million (Vietnamese Government: 5.3; Asian Development Bank: 7.4).

... and fish

The Vietnamese like fish and national production is not sufficient to meet the demand. To improve this situation, another project foresees the construction of 252 fishing vessels with

imported engines and equipment and the establishment of a pilot shrimp "farm" of 100 ha. It is estimated that out of the total annual production of about 26000 tons of fish under the project, about 24500 will be available for domestic consumption.

Investment: $11.58 million (Vietnamese Government and Agricultural Development Bank of Vietnam: 5.58; Asian Development Bank: 6).

Afghanistan: the gates of Kajakai

Agriculture is the most important sector in the economy of Afghanistan, and its development has been severely curtailed by limited irrigation facilities.

The installation of eight gates on the spillway of the Kajakai reservoir in the Upper Helmand Valley will increase the capacity from 1720 to 2730 million cubic metres of water.

Thus irrigation will be extended to 26000 ha of lands presently not irrigated. This will allow the cultivation of wheat, maize, cotton and vegetables. The project will also help reduce flood damage by about $370000 every year.

Investment: $17.13 million (Afghan Government: 2.88; Asian Development Bank: 14.25).

Thailand: rice all year-round

Nong Wai in northeast Thailand is the least developed region in the country. This is why it was chosen for the first comprehensive pioneer scheme for irrigated agricultural development in the Lower Mekong Basin over a 12 000-ha irrigable area containing about 4 000 farms. The project will help to transform the traditional wet-season single rice cropping system into year-round intensive cultivation of rice in the entire irrigable area. It is hoped that about 42 000 tons of paddy will be produced each year by 1985.

Investment: $14.6 million (Thai Government: 9.6; Asian Development Bank: 5).

Philippines: house rice

The Philippine Government is trying to become self-sufficient in rice. An important irrigation project will contribute to this: the project of the

IDB borrows on the U.S. market

The Inter-American Development Bank (IDB) is making a public offering on the U.S. market of a ten-year loan amounting to $100 million. Priced at 99 percent of their normal value, the notes are redeemable at 100 percent in January 1985 together with accrued interest at 8.25 percent per annum. The offer is being made through a group of U.S banks under the joint management of Lehman Brothers, Lazard Frères et Co., Goldman, Sachs and Co. and Merrill Lynch Pierce Fenner and Smith Incorporated. The net proceeds from the loan will be used to make other loans for economic development projects in Latin America.

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Special advantages

Solid ribs on outer surface · Enlarged cross-section · Improved collapse resistance · Rounded ribs · Improved gravel deflection · Minimized notch effect · Optimal hydraulics

Decisive improvements

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Andanan and Simulao rivers in the eastern part of the island of Mindanao. With the construction of 657 km of irrigation canals, 595 km of drainage system and 90 km of service roads, and with an agricultural development programme in the area under consideration (8700 ha), the project should lead to an annual production increase of 53000 tons of paddy and 3700 tons of grain. The programme would also include the establishment of two pilot demonstration farms of 50 ha each, the strengthening of agricultural extension services, provision of farm equipment, marketing facilities and other supporting services, such as agricultural credit, fertilizer and other farm inputs, training and technology.

Investment: $13.2 million (Philippine Government: 7.4; Asian Development Bank: 5.8).

Malaysia: settlement of 500 000 people

In the southeastern part of Pahang State, in Peninsular Malaysia, the area known as the Pahang-Tenggara consists of 1 million ha of undeveloped jungle. Under the plan adopted by the Malaysian Government, some 500000 people — including 250000 immigrants from other states — will be settled in this area. The new settlers will be drawn from landless and underemployed labourers and smallholders from disadvantaged population groups. Large-scale operations in forestry, agriculture and mining are part of the project; 30 new towns and 113 km of roads will also be constructed.

Investment: $33.6 million (Malaysian Government: 15.6; Asian Development Bank: 18).

Korea: cut down the rural exodus

To increase agricultural production and at the same time raise the living and employment standards of the farming population north of Seoul, the Republic of Korea is launching the Imjin project (called after the river Imjin) in an area of about 20600 ha. As regards the land, the project includes the construction of dikes and pumping stations, irrigation systems, land consolidation and reclamation works; as regards services, it includes farm mechanization, cooperative farming, improvement of village water supply and consultant services. Livestock development and reforestation are also included in the project. Another aim: to help reduce the exodus of the farming population to the Seoul metropolitan area.

Investment: $42.6 million (Korean Government: 23.6; Asian Development Bank: 19).

Information, please

What are petrodollars?

Crude oil prices are not quoted in dollars just for convenience. Since the winter of 1974, when the Saudi Arabians refused to accept part of their oil revenue in pounds sterling, all oil is bought in U.S. dollars.

In 1973, when the petroleum exporting countries earned only $2.10 a barrel, oil revenues were easily absorbed into the mainstream of world trade and investment. The money was spent on luxury cars, contracts with Western construction companies, shares, gold and all sorts of other money substitutes and goods. In 1974 the price rose by 300 percent — to $8.50 a barrel — and the oil revenues became far too big to spend.

In the first nine months of 1974, the surplus of unspent oil money totalled $35 thousand million. By the end of the year, it reached a total of $55 thousand million. A surplus of just under another $50 thousand million is predicted for this year. Petrodollars are simply this surplus sum of dollars earned by the petroleum-exporting nations. The use of these massive sums of money is both an investment problem and a major political issue.

Initially, the Arabs left the bulk of their money in short-term bank deposit accounts, favouring the eurodollar market, which offered interest rates higher than could be obtained inside the United States. A breakdown of the first nine months surplus showed only 23 percent of petrodollars being held in America, compared to 11 percent in sterling and 44 percent in eurodollar accounts. The Bank of England has released figures that indicate just how liquid the Arabs stayed in this period. Of £8 thousand million placed with London banks, exactly half was withdrawable at a week's notice or less, and three of the remaining four thousand million were on terms of three months or less.

Much of this money will remain in one form or another on loan to the industrialized nations whose debts have produced it. The OPEC policy makers are sophisticated economists, fully aware that if all investment capital is sucked out of the OECD nations to finance their oil debts, the result would be a severe depression. Medium-term loans to the World Bank, the International Monetary Fund and the Common Market have already been agreed. And a further part of the petrodollar surplus has been invested in government bonds and selective industrial investment.

Contrary to the rather patronizing assumptions made in the West, the OPEC countries are displaying an ability to reduce the surplus by direct productive investment in their own underdeveloped territories — which is remarkable. Iran, for example, is investing so fast in its own industrial growth that it could even be running a balance-of-payments deficit in three or four years if Iranian treasury officials' predictions come true. And again, soft loans and development aid to poor Arab countries and to the Third World at large have absorbed far more of the surplus than the Western world expected.

Although the West as a whole has not yet fully recovered from the shock of finding itself in the position of debtor to countries which it had once exploited with carefree ease, it is beginning to realize that this change in the world's terms of trade is a blessing in disguise. It is forcing the industrialized nations of the world to conserve rather than to consume the earth's limited resources. And it is hastening investment in energy research, which means that instead of facing the problems of the twenty-first century at the last minute and possibly too late, we are starting serious forward planning. Hurrah for petrodollars!

The first food in life–milk.

It adds up!

The last check point -the moment of consumption.

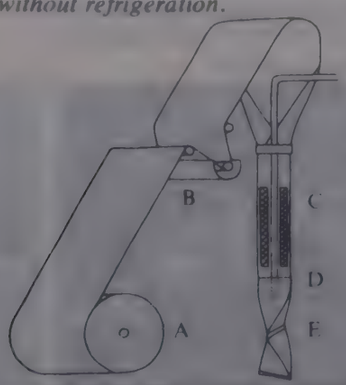
Milk is our most highly perfected food and consequently also the most sensitive. The path of the milk from the cow to the consumer is strewn with check points. The health of the cows is checked. Every milk delivery from every farmer is checked. Milk collection and transport of milk to the dairy is checked. The various phases of milk treatment are subjected to continuous checking.

But what happens then? What about checking the distribution? Distribution to all the hundreds of thousands of individuals who will consume their own portions of milk can be a matter of hours and take place under severe climatic conditions.

It is here during the last, vital stage on the milk's long journey to the consumer that the package enters the picture. It must serve to preserve the goodness of the milk regardless of how it is stored and transported. It must not be openable and re-closeable without this being noticed. It must state the contents in plain language.

Only then can we be absolutely certain that the final consumer really will get the valuable nourishment he's paid for – it is then that the sum of all the efforts is added up.

This is the Tetra Pak Aseptic packaging system which makes it possible for milk to be kept for weeks without refrigeration.



Basic principle:

a) The packaging material consists of plastic-laminated paper in the form of a roll.

b) The packaging material is presterilised by passing through a bath containing hydrogen peroxide.

c) The paper is formed into a tube, the inside of which is completely sterilised by radiant heat from an electric element.

d) The sterilised and dry paper tube is filled with the UHT-treated product.

e) The paper tube is sealed below the liquid level, which gives completely filled cartons.

For further information, write to Tetra Pak International, Information Department, Fack, S-221 01 Lund 1, Sweden.

We care for the value of milk.

Tetra Pak

Breaking the vicious circle

The world rice shortage, which in the past two years resulted in severe hardship for consumers in many developing countries — the exceedingly high prices meaning a further reduction of the already low per caput consumption levels — now shows signs of easing. Viewed in a longer term perspective, this improvement means that importers are now able to buy rice on the world market at prices that are about one third below the peak reached last year. But even at this reduced level, prices are more than double those of two years earlier, and three and a half times the prices quoted four years ago.

The traumatic experience of the past two years has highlighted once again the instability and volatility of the rice situation. The present situation also has several elements that might contribute to this instability. The current shift of import demand away from rice is likely to lead to price reductions. But if carried too far, the price fall could dampen the production incentives and initiate a process of downward adjustment in production. As has often happened in the past, unfavourable weather in an important producing area could bring a serious shortfall, and thus lead to widespread shortages and very high prices.

How can this vicious circle be broken? How can these cyclical swings, which by their very momentum accentuate the basic instability of the rice economy, be moderated?

The basic solution can be found only in appropriate measures to stabilize production conditions so that the vulnerability of rice production to weather damage is reduced. This is especially important for rice since its cultivation is concentrated in one geographic region — South and Southeast Asia — where one broad type of weather conditions prevails. The main problem here is to improve and extend the controlled irrigation and drainage facilities, which are still very limited. Although progress can be achieved only gradually, it is essential to give a higher priority to the necessary investments for better water management.

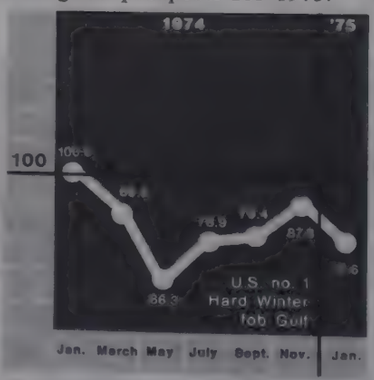
In the meantime, adoption of appropriate stockholding policies can help significantly to minimize the impact of unplanned production fluctuations. In this area, encouraging progress has been made recently in the wake of the very difficult period experienced by the world not only in respect to rice but also to all cereals. In November 1974, the FAO Council approved an International Undertaking on World Food Security, which aims at a coordinated programme of nationally held reserves, supported by a global food information and early warning system. Adequate stocks of rice, the staple food in many heavily populated countries, can contribute significantly to achieving the objectives of world food security. Rice stockholding has special problems of its own, which would need to be satisfactorily resolved. Mainly, these relate to the technical problem of storing rice in tropical conditions, and the financial problem of enabling producing developing countries to build up and maintain stocks

The ceres price index

In each issue, ceres *publishes price indexes covering the preceding twelve months for 16 agricultural products. This index has been calculated with the base January 1974=100 (unless otherwise indicated) to facilitate comparison of price movements between different commodities; it should not be confused with any other existing* FAO *indexes.*

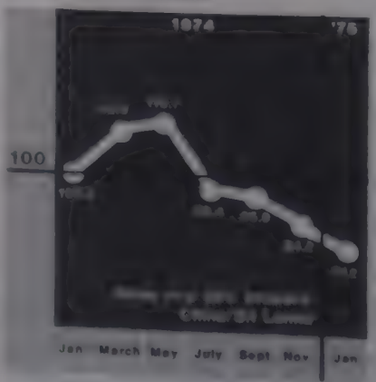
Wheat

Export prices have fallen sharply since November 1974, reflecting supply management in exporting countries, shortage of foreign exchange in importing countries, cancellation of several contracts and good prospects for 1975.



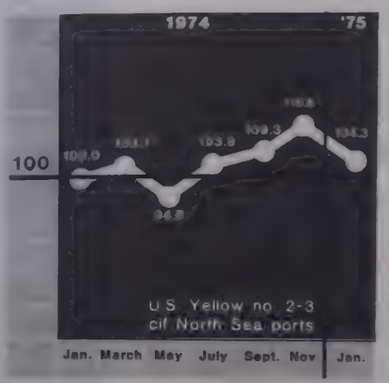
Rice

From November 1974 to January 1975, prices continued to decline, mainly because balance-of-payment problems still limited severely the purchasing power of a number of rice-importing developing countries.



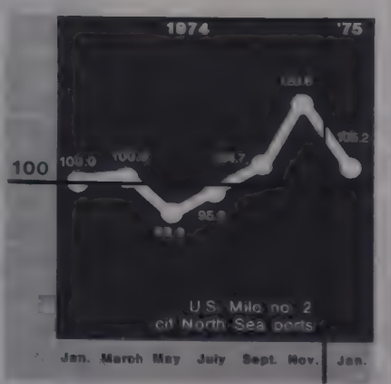
Maize

Prices of *maize, sorghum* and *barley* declined considerably from November 1974 to January 1975 . . .



Sorghum

. . . reflecting mainly the shrinkage of demand for feed grains in the United States and Western Europe . . .

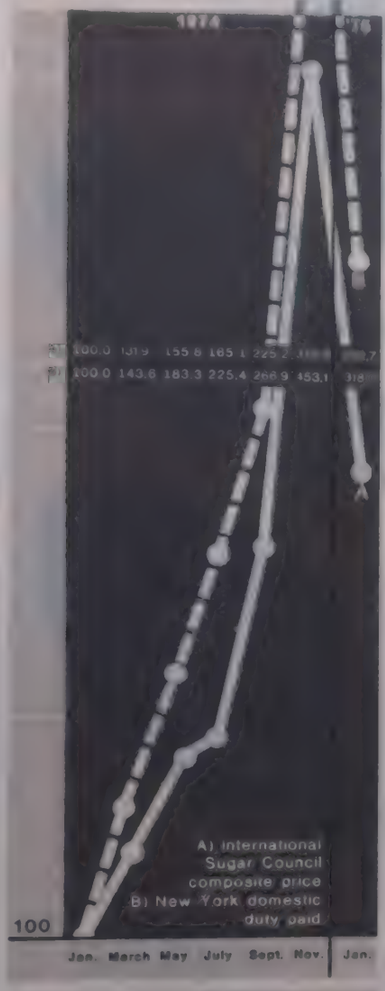


Barley

. . . due to cost price squeeze in the livestock industry and slackening consumer demand for meat.

Sugar, raw

Price falls in December 1974 and January 1975 reflected declining consumption, reduced import demand, and uncertain agreement between sugar exporting countries and the EEC. The agreement has since been concluded.

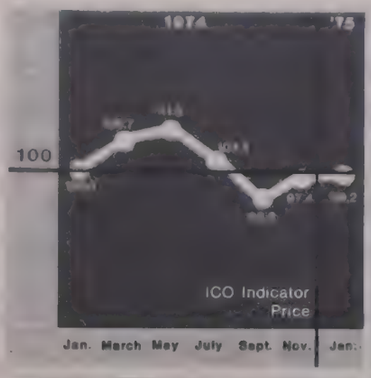


Fats and oils

Due to continuing tight supply/demand situation, prices continued to fluctuate at high levels.

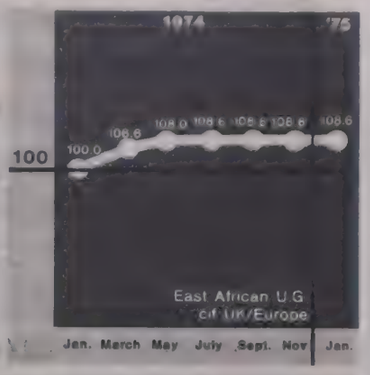
Coffee

The composite price rose until January 1975 but has since fallen, largely because of good prospects for the 1974/75 crops.



Sisal

Prices remained stable with continuing supply shortage and spinners increasingly interested in price-competitive synthetic substitutes.



Bananas

The upward trend in prices caused by lower shipments from Central America was reversed in October 1974 owing to adequacy of supplies.

1974
'75
100
First-class tropical pack from Central and South America, low importers to wholesalers New York
Jan. March May July Sept. Nov. Jan

Tea

Prices continued to increase with demand remaining unchanged and supply having fallen or remaining stagnant.

Jute

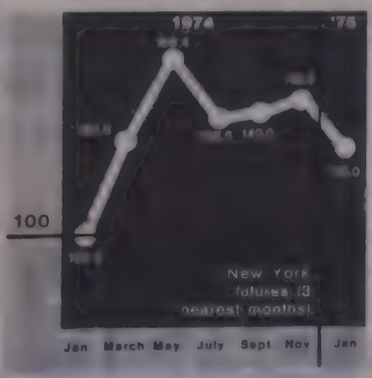
Prices remained stable at high levels (£200/long ton), due to large reductions in world output and producer price increases to stop the shift from jute to food crops.

Skim milk powder

After record levels in mid-1974, prices of skim milk powder decreased slightly during the last months as a result of calm world markets and the heavy stock situation.

Cocoa

Prices during December 1974 and January 1975 declined somewhat because of better crop prospects for 1974/75, especially in Latin America, and the outlook for reduced consumption in 1975.



Natural rubber

From November 1974 to January 1975, the decline in prices started in early 1974 continued, reflecting slack demand due to stagnation of industrial activity and unfavourable general economic outlook.

Cotton

Prices continued to move downward with the worsening of recession in world textile industries.

Agrochemicals of our time

BASF research and BASF production ensure that poor soils become fertile, and fertile soils bring more crops; that pests are destroyed and fungus diseases controlled; that the plants do not have to compete with weeds for a place in the sun. Everywhere in the world the crops per acre are larger than 10, 20 or 30 years ago— thanks largely to BASF fertilizers and plant protective agents.
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Some basic facts necessary for an understanding of the market

Wine

Wine is produced in many countries, but only a small number account for the bulk of world output and consumption. The largest producers are France and Italy, together contributing about 45 percent of the world total, followed by Spain, with more than 10 percent. Other important countries in Western Europe include the German Federal Republic, Portugal, Yugoslavia and Greece, which together produce 10 percent of world output.

Among the developing countries, the production capacity of Algeria, which was a major producer and the largest single exporting country (40 percent of world exports in the early 1960s), has been reduced to less than half the level of ten years earlier to adjust to smaller market outlets following independence and the loss of the French market.

In the southern hemisphere, Argentina produces more than 5 percent of world output, and production is increasing rapidly in several other countries. In the United States, total acreage under wine grapes in 1977 is expected to be double that of 1973. Output has also increased rapidly in Eastern Europe and the U.S.S.R., which now produces nearly 10 percent of world output.

Until 1974, the international market offered dynamic prospects for export growth. During the preceding decade, the volume of exports increased by more than 50 percent to about 45 million hectolitres in 1973, while the value of trade more than doubled to reach US$1.9 thousand million.

However, wine trade fell in 1974: the rise of 1973/74 production to unprecedentedly high levels, following two years of reduced production, led to a rapid deterioration in prices, and when the large size of the crop, was evident, assistance had to be extended in the EEC and in Spain for voluntary storage and distillation. As the largest producing countries are generally also the largest markets, 1974 import requirements fell. Import demand in non-traditional consuming countries, which provided much of the impetus for past growth, was adversely affected by unfavourable general economic conditions. Consequently, despite a decline in 1974/75 production, short-term prospects are uncertain.

Over the longer term, production capacity has been growing in several producing countries and also in certain countries that until recently represented important market outlets. The trend is upward in the EEC and most other producing countries of Western Europe. Rapid increases are also expected in the U.S. and in Eastern Europe and the U.S.S.R. Therefore, there is a danger of output growing more rapidly than demand, with resulting structural surpluses and serious marketing difficulties.

	1966-70 average	1970	1971	1972	1973
Production			Thousand hectolitres		
World Total	**283 278**	**306 664**	**288 267**	**278 302**	**340 637**
Developed countries	207 058	224 119	200 838	194 056	262 553
of which: France	62 881	74 374	61 331	58 536	82 428
Germany, Fed. Rep.	6 029	9 099	5 545	6 860	9 841
Italy	69 057	68 874	64 212	59 890	77 716
Portugal	10 224	11 328	8 835	8 196	11 240
Spain	25 363	25 610	23 330	26 560	39 994
Yugoslavia	5 893	5 478	5 546	6 263	7 701
United States	12 182*	11 670	14 670	9 650	16 270
Developing countries	40 474	39 003	43 434	39 482	38 934
of which: Argentina	21 175	18 360	21 783	19 990	20 000
Algeria	8 124	8 692	9 247	5 753	6 300
Centrally planned countries	35 746	43 542	43 995	44 764	39 150
of which: U.S.S.R.	20 761	26 845	28 042	29 300	20 700
Imports					
World Total	**30 180**	**38 540**	**37 745**	**41 090**	**42 791**
Developed countries	21 097	26 381	25 323	28 599	31 371
of which: Belgium-Luxembourg	1 096	1 319	1 317	1 454	1 507
France	7 602	10 910	8 782	8 821	9 050
Germany, Fed. Rep.	5 471	6 285	6 714	7 817	7 699
United Kingdom	1 634	1 746	2 152	2 585	3 571
Switzerland	1 774	1 942	2 000	2 150	2 454
United States	856	1 104	1 157	1 797	2 100
Developing countries	3 078	2 871	2 566	2 224	2 151
Centrally planned countries	6 005	9 288	9 856	10 267	9 269
of which: U.S.S.R.	3 971	7 188	7 718	7 793	6 721
Exports					
World Total	**29 372**	**36 886**	**34 220**	**40 373**	**41 134**
Developed countries	14 529	17 974	22 671	28 745	27 208
of which: France	3 810	4 132	4 813	5 764	7 241
Italy	3 192	5 551	9 306	14 242	10 468
Portugal	2 451	2 051	2 019	1 967	2 096
Spain	2 685	3 333	3 647	3 865	4 069
Yugoslavia	433	468	614	678	691
Developing countries	11 621	15 006	7 259	7 198	9 414
of which: Algeria	9 136	12 919	6 198	5 623	–
Morocco	1 116	959	440	400	1 330
Centrally planned countries	3 222	3 906	4 290	4 430	4 512

* *Estimate*

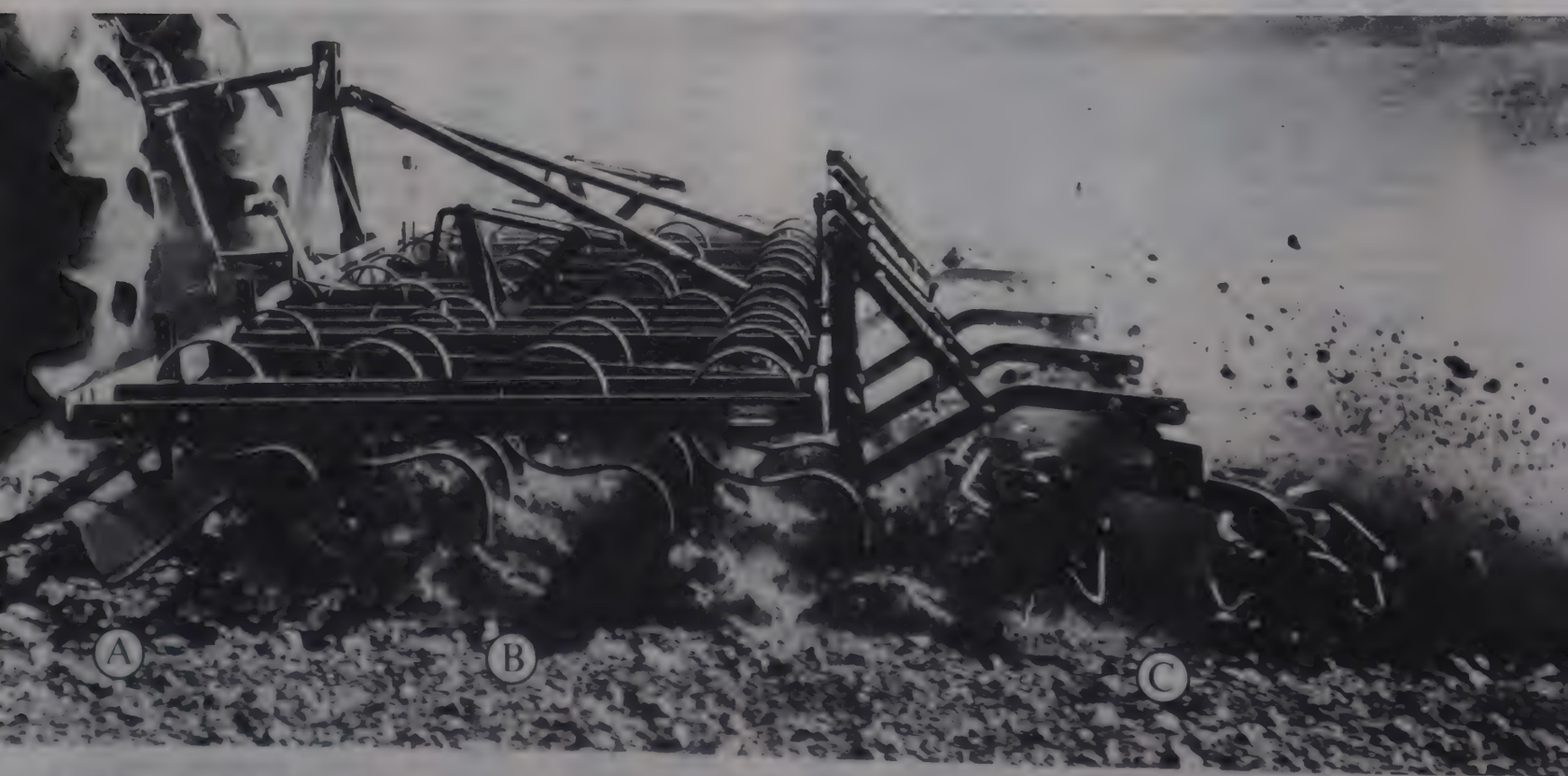
**"Listen, Mr. Nielsen,
maybe your cultivator *has* increased crop production in 52 countries.**

"And maybe you *have* done it with fewer chemicals and less fuel oil.

"But my country isn't at all like those other countries!"

It's true, of course. The fact that our Danish Kongskilde Vibrating S-Tine Cultivator is currently increasing crop production in so many countries doesn't at all mean that it will work everywhere else.

So let us look at exactly *how* our cultivator increases crop production, and *why* it works with fewer chemicals and less fuel oil than any other type of implement. And then judge for yourself whether or not it can do the same job for your country.



1. How our cultivator lessens the need to use chemical weed & root killers.
2. How our cultivator helps increase crops.
3. Why our cultivator uses less fuel and covers more ground than any other type of implement.
4. Why our cultivator is easier to use and maintain.
5. Why our cultivator costs less than any other type of implement.
6. Two disadvantages of our cultivator.

1. *The Danish Vibrating S-Tine ltivator kills roots and weeds* by first gging them up to the surface of the th, and then shaking off the remain- soil through the vibrations of the es, thus leaving them to a certain ath.

other types of implements, including c and rotary harrows, chop and cut the weeds and roots, but leave them ried in the ground, where many of em will of course continue to grow.

is is why our way of killing roots d weeds needs far less help from emicals than any other way.

2. *Our cultivator makes the ideal ed bed by doing 3 things at the same ne.* First, the leveling bar in front of e tines (A) breaks the big clumps of rth into medium-sized clumps. hen, the vibrating tines (B) hit these umps breaking them into little umps. Lastly, the rotocrat (C) behind e tines crumbles these little clumps to exactly the right size for receiving d holding the seeds evenly and at e right depth. All this is usually nished in one pass over the fields, o at the most.

By contrast, other implements, such harrows, for example, use the same ades for chopping at roots and chop- ng at clumps of earth. The only way r them to do this effectively is to ake multiple passes over the fields. ut making multiple passes often lverizes the soil into a fine powder – nich then either blows away in the st strong wind, or cakes up like rock ter the first good rain. But even when harrows avoid pulverizing the soil, they can never crumble the soil the way our cultivator does, and thus can never make seed beds as consistantly dependable as those made by our cultivator.

Crumbling serves another important function. Each crumb of earth formed by our cultivator consists partly of the air and water that enables the seeds to root properly and the seedlings to grow strong. But pulverizing forces much of the air and water out of the earth, resulting in crooked rooting of the seeds and weaker, less numerous seedlings.

These are the basic reasons that our cultivator helps increase crop production wherever it is used. There are other reasons, but none as important as the above.

3. *Our cultivator uses less fuel and covers more ground per hour than any other type of implement.* Using a 2.5 meter (8 ft., 6 in.) working width as a standard:
A rotary harrow needs 90 to 110 hp *to pull it at its normal working speed of* 2–3 Km/hr.
A disc harrow needs 60 to 70 hp *to pull it at its normal working speed of* 5–6 km/hr.
A Vibrating S-Tine Cultivator needs 35 to 45 hp *to pull it at its normal working speed of* 8–12 km/hr.

All figures are from manufacturers' own specifications. (An additional reason that our cultivator uses less fuel and covers more ground per day is that it needs to make fewer repeat passes over the fields, as mentioned above.)

4. *Our cultivator is easier to use and maintain because it has fewer moving parts than any other implement.* This needs no further explanation.

5. *Our cultivator costs less to buy because it is lighter, has fewer moving parts and thus costs less to manufacture.* Exact costs vary from country to country because of differences in customs and shipping costs. But of course, when you get our price for your country, you can make your own comparisons. And all our cultivators are unconditionally guaranteed for two years.

6. *There are two disadvantages to our cultivator:* The first is that it is too light to work in *extremely* hard soil. The other disadvantage is that lots of loose straw will clog the tines. Except for these two unusual situations, our cultivator will increase crop production exactly the way we say it will – and we have over 200,000 of our cultivators out proving this all over the world.

But let's forget the rest of the world: We will be glad to give you as many free demonstrations as you like with our cultivator, on fields of your own choice, in your own country.

Just say when!

Thank you for reading this long message. We hope that one way or another it was worth your while. For further information about our cultivator, please fill in and mail the coupon below. If you have any further questions, please write to us. In either case, we will answer by return mail.

ver 200,000 Danish
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e currently increasing crops in:

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ba	Kenya	Tanzania
nmark	Luxemburg	Thailand
uador	Libya	Tunisia
Salvador	Malawi	Uganda
iopia	Mali	Uruguay
ance	New Zealand	U. S. A.
land	Nicaragua	U. S. S. R.
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"25 years experience in helping to increase crop production."

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Kongskilde Maskinfabrik A/S
DK 4180 Soro, Denmark

Dear Mr. Nielsen:

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The best time for me would be next _____ month

Name & Title _____ Company or other affiliation

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The computer and the ladybug

Big research is very glamourous. It may require cyclotrons, beta or other trons, magnetohydrodynamic apparatus, professors and vertical research teams and, of course, megadollar budgets and third-generation computers.

Small research, insofar as equipment goes, may require a finger to scratch a scalp under which there is a brain; or the inclination to wonder whether anything interesting will happen if you put this there and that here or mix this with that; or the curiosity really to observe what goes on around you and the desire to improve on it.

There is no denying that big research has come up with an extraordinary wealth of useful results. But small research (older, and thus sometimes considered old-fashioned) can also boast of an impressive list of achievements; one could probably include fire, cooking and the wheel, as well as the "big bang" theory to explain the formation of the universe. Yet, small research is usually fueled by small, and sometimes even by nonexistent, budgets.

Two recent examples are given in this issue — a Chinese sanitation technique where a handful of dust has made a huge difference to millions of people, and the use of the ladybug to eat up a pest that destroys date palms.

Sometimes, the results of small research seem so obvious that one wonders whether they deserve to be considered as part of science and technology. They do. Somebody has to think, to experiment, to evaluate results, and somebody must spread the news. Both of the examples listed below have beneficial consequences that overshadow those of some very big research projects.

Unfortunately, while there are thousands of journals devoted to the publication of big research projects, there are very few indeed devoted to small research. Big research interests readers who can afford journals in the first place, and who are more likely to buy assorted supplies and equipment than readers concerned with small research projects. The trouble with small research is... well, that it is small. Can you imagine someone publishing (or advertizing in) The Annals of Small Research?

There is a paradox here. The consciousness of the social implications of scientific information is relatively recent — a few decades. Hardly anyone nowadays denies that the scientific education of the masses increases their power of productivity, and there's hardly a country where an effort isn't made to popularize science.

With regard to this very social aspect of science, the paradox is the frequent emphasis on the big at the expense of the small. This is particularly true of the developing countries, where the immediate benefits of the ladybug may be needed before people can even start appreciating the wonders of a third-generation computer.

FOOD RESEARCH

To drink a glass of milk...

It is estimated that somewhere around half of the people of the world (and particularly non-Europeans) are unable to easily digest lactose, or natural milk sugar. Sometimes, a glass of milk is enough to provoke diarrhoea and other intestinal problems. It is not certain whether this intolerance is hereditary or acquired, as all babies, unless they have a rare congenital defect, are capable of handling lactose.

There have been many attempts to overcome this intolerance — by fermenting the milk with microorganisms or breaking it up chemically — but the results have never been entirely satisfactory, either because the techniques were too complex and too costly or altered the nutritive value of the milk.

An American researcher, Dr. Arthur G. Rand of the University of Rhode Island, seems to have come up with the best solution so far: he uses an easily available enzyme, lactase (or beta-galactosidase), to change the milk lactose into glucose and galactose, two simple sugars that can be easily digested. The nutritive value of milk is unaltered, but the taste is much sweeter than that of natural milk.

Milk preservation in the tropics

Keeping milk cool as it is collected from scattered suppliers in the tropics is often impossible, and conditions favour the multiplication of microorganisms. According to Dr. F.J. Siegenthaler of the University of Michigan, a small (0.08 percent) amount of diluted oxygen peroxide can preserve milk for 24 to 36 hours in tropical temperatures. A nonrefrigerated preservation technique for milk surpluses is to make unripened cheese, which can be stored for long periods in a brine solution.

ANIMAL HUSBANDRY

From chicken to beef

Experiments carried out in the United States show that the manure of 18 chickens can provide a crude protein supplement in the fodder of one feedlot cow. When dehydrated, poultry manure contains between 30 and 45 percent crude proteins, which can be substituted for more costly traditional supplements. Good results have been achieved with rations in the form of pellets containing 80 percent maize flour and 20 percent dehydrated poultry manure.

According to researchers at the Agricultural Research Service, U.S. Department of Agriculture, no untoward side effects have been observed, either in bovines or in ovines.

Another advantage: the savings resulting from this recycling is an enticement to clean up poultry manure, a well-known source of unpleasant pollution.

From beef back to chickens

The next step in recycling, one would think, is to use cattle manure as a fertilizer. Not necessarily: cattle manure can also be turned into protein and used as fodder supplement. At least this is suggested by research carried out by the General Electric Research and Development Center (Arizona), where a strain of thermophyllic bacteria has been found particularly effective in digesting cellulose and lignin in cattle manure. A pilot plant has been set up in the hope of

proving that a competitively-priced high-protein animal feed supplement can be produced and, who knows, given back to the chickens.

Don't stomp the beetles

Another alternative, perhaps more suitable when manure is spread thinly over large surfaces, kills grazing pastures and becomes a general nuisance, has been adopted by Australian cattle ranchers. They have imported dung beetles (*Heliocopris*) from Africa, and let them loose on pastures. This beetle lives in part on fresh manure and busily stores the rest underground to feed its young; these activities improve soil fertility and drainage, and make the fresh manure unfit for the reproduction of flies.

MACHINERY

An easily made spinning wheel

One of the problems of the wool spinning industry in the developing world is that imported wheels are usually expensive and, if something goes wrong, spare parts may be difficult to obtain.

To overcome these obstacles, OXFAM has attempted to develop, in Lesotho, spinning wheels that could be made by villagers from easily available materials and with minimal tools. Several prototypes have been tried and, after adjustments, an easily made wheel (using a bicycle wheel) was completed. It can produce yarn of as good quality as that spun on imported wheels.

SANITATION

A handful of dust...

Spectacular results can sometimes be achieved with the simplest methods. Thus in China, among the most effective weapons against flies and other insects that can be potential carriers of disease, are dust and earth. A thin layer of either, spread over garbage that cannot be rapidly removed, is enough to prevent insects from laying their eggs and reproducing in their favourite culture media. The technique does not prevent the later removal of the refuse and its transformation into fertilizers.

Chinese authorities believe this method, introduced in most of the country, has been a great contribution to the improvement of sanitary and health conditions in rural areas.

This 7-horsepower axial flow multicrop thresher has been developed by the International Rice Research Institute (IRRI) in Manila. It has an output capacity of 750 to 1 000 kg of paddy per hour. The thresher is being manufactured by 6 firms in the Philippines and evaluated in several rice-producing countries.

PUBLIC HEALTH

Warning: Treated seeds

Seeds that have been treated with pesticides or fungicides can be poisonous. To avoid accidents, they should be dyed red or orange.

These recommendations were made by a group of FAO experts, which meets twice a year to outline international norms for pesticides. Usually, the active pesticide ingredient is not used alone, but in a mixture with other substances that reinforce its properties. Dyes to tag toxic pesticides that are colourless and odorless can be added to the formula.

NUTRITION

Protein packets

In an innovative grass-roots nutrition programme near Hyderabad, packets of high-protein foods are put on sale in village markets. They are packaged in plastic bags sealed by candle flame by women's clubs in the villages, and also distributed free of charge to village health clinics for children with protein-deficiency diseases. The packets contain a blend of whole wheat, chickpeas, groundnuts, sugar and skim milk powder (or soybean flour).

A tiger in your orange juice

A natural beverage, rich in proteins as well as vitamins, can be made by combining concentrated cheese whey and orange juice.

Yam chips and fritters

Twenty-five yam varieties have been evaluated in Puerto Rico for processing into chips and French fries. Only one variety, *Dioscorea alata*, gave excellent results with regard to

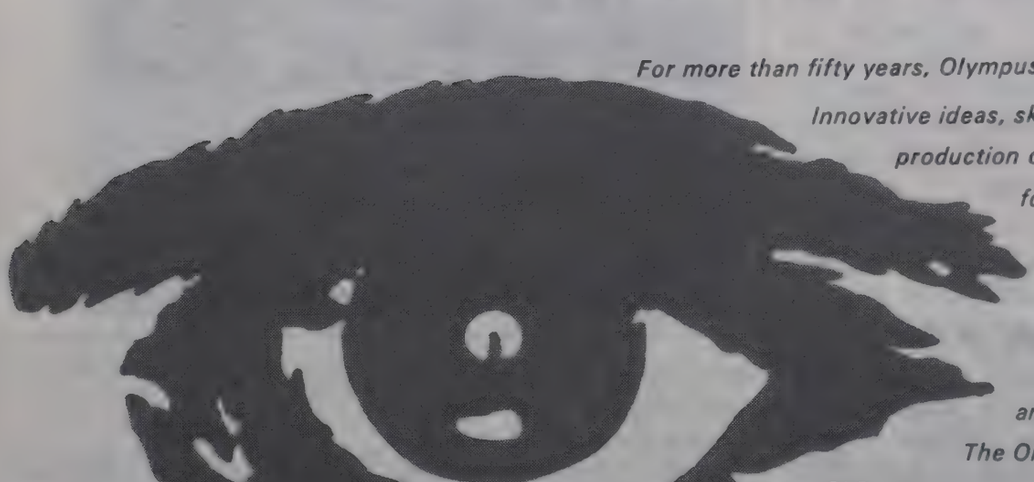
Do-it-yourself winnower

The technical description of the construction and functioning of a simple hand-operated winnower for grain and groundnuts has been published by the National Institute of Agricultural Engineering (England). It contains a list of the materials and parts required, and instructions for the assembly. The winnower can easily be put together by a village carpenter equipped with standard tools.

During the first trials, the prototype could process up to 400 kg of long rice per hour, 250 kg of North African groundnuts, and 180 of Gambian groundnuts (the results with the latter were less satisfactory, a good part of the nuts coming out unshelled.)

OLYMPUS

Technology-removing the doubt from research



For more than fifty years, Olympus has been a leader in optics research. Innovative ideas, skillful design, and precision production of microscopes, fiberoptic instruments for medicine and industry, and cameras have earned a highly respected reputation worldwide for the Olympus name. Recent advances have been made in the fields of specialized communications, metrology, and diagnostic instrumentation. The OM-1, most advanced, complete lightweight SLR camera system available today, and the Pearl-corder, a pocket-size tape recorder, are for both the leisure and scientific marke All of these indicate the versatility and scope of Olympus capability. At Olympus, technological leadership is not only a policy, but a fact.

VANOX

Almost limitless flexibility is the attraction of the Olympus Vanox. This universal microscope has found application in wide-ranging fields in its multifarious forms.

It is based on a high precision building-block system integrating many interchangeable accessories and optics. The standard Vanox, equipped for transmitted or reflected light, converts quickly for fluorescence microscopy, phase contrast, darkfield and interference contrast, to fit the requirements of general research, pathology, metallurgy and many branches of the sciences. For photomicrography it takes a choice of camera types and sizes with unvarying high resolution results. The Vanox is a reasonably priced way to extensive capabilities in microscopy.

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taste, crispness and appearance. The *Forastero* variety came second best.

The tubers were peeled, sliced and cooked in maize oil at 190°C. Maize oil and a mixture of lard and hydrogenated vegetable oil gave even better results.

A resistant high-yielding rice

The International Rice Research Institute has produced a rice variety, called IR26, which is resistant to brown plant hopper and resistant or moderately resistant to most major diseases and insects of rice in tropical Asia.

IR26 also turned out to be the highest yielding of 13 varieties in irrigated trials during the wet season (with a yield of 5.8 metric tons per hectare), and the highest yielding of 16 varieties in rainfed lowland trials (55.6 tons per hectare).

PUBLICATIONS

Low-cost, no-fuel tools

The Intermediate Technology Development Group has recently published a *Guide to Hand-Operated and Animal-Drawn Equipment.* It contains a wealth of information on low-cost tools (and their manufacturers), which may be used to increase the productivity of traditional agriculture in many developing countries. The *Guide* has sections describing equipment for cultivating, planting, crop protection, irrigation, threshing, cleaning and processing. £1.50 at the ITDG, Parnell House, 25 Wilton Road, London SW1V 1JS, U.K.

The right insect

The date palms probably originate from regions north of the Persian Gulf, and were introduced to Africa during Islamic migrations after the time of Muhammad. Since then, countless palm groves have been planted in North Africa and in the Sahelian region, and they have often become one of the most important local resources.

However, African date trees can be destroyed by the white cochineal, a tiny insect whose barely visible larvae punch holes in the palm leaves, suck their sap, and apparently also inject a little-known toxic substance that contributes to the destruction of the tree. The larvae, covered with a kind of shield, are protected against most predatory insects, birds and even chemical insecticides. Sometimes the cochineal proliferate so rapidly that they can destroy palm groves over an entire region.

However, the trees in Iran or Iraq appeared to offer much greater resistance to the cochineal. In recent years, this observation has led to an effective palm grove sanitation programme, which could serve as an example because of its simplicity and its low cost. More than 10 years ago, the French Institute of Overseas Fruit Research, in collaboration with the Paris Museum of Natural History, started looking for another insect, in the original environment of the date palm north of the Persian Gulf, which would be a natural enemy of the cochineal and protect the trees. Thus, a small Iranian ladybug (*Chilocorus bipustulatus iranensis*) was discovered.

Some time later, the French Committee for the Freedom from Hunger Campaign (FFHC) undertook a first field operation. Colonies of Iranian ladybugs were shipped to African regions where palm groves were threatened with destruction. Under favourable temperature and humidity conditions, the ladybugs reproduced rapidly. Placed atop a date tree, they attacked and destroyed the parasitic larvae. Thus, a palm grove, which was believed to be condemned, recovered in Mauritania in 1968; in the following years, nearly all of the date palms of the region were rid of their destructive parasite.

Gradually, transported in assorted boxes, cans and on palm tree leaves, the Iranian ladybug spread to other Sahelian country. Effective and inexpensive, the ladybug programme is aided today by several international organizations. What's more, it is easily adopted by local growers, who find the ladybug to be a more congenial and less costly means of preserving their groves than the often expensive insecticides, whose effectiveness, in this particular area, remains to be demonstrated.

About groundnuts

The University of Kentucky has produced a *Limited Review of Some Worldwide Laboratory and Field Research on the Groundnut.* It covers history as well as classification of groundnuts; growth and development; climate and soils, crop sequences, manures, fertilizers and other soil amendments; culture; pests and diseases; harvesting, handling and storing, and agricultural economics.

Tropical wood

Natural durability and artificial preservation methods of tropical woods are two factors that determine their use in tropical countries. Many studies in the field have been made and their results published by researchers or institutions, but there does not appear to be a single reference work summing up all of these studies in a manner practical to the user.

The purpose of the book published by the International Development Research Centre (Canada) is to assemble and screen all available studies, either published or not, on natural durability and methods of preservation of African tropical woods. The interpretation and comparison of data has led to presentation in the form of synoptic charts. "*Durabilité naturelle et préservation artificielle de 100 bois tropinaux.*" Available in French. An English adaptation is being prepared. IDRC, Box 8500, Ottawa, Canada.

SISCOMA

THE TROPICAL AGRICULTURE SPECIALIST

Since **SISCOMA** was set up in 1961, its aims have been to satisfy the farmer's needs for agricultural materials, encourage export, train labour in mass production technology, develop up-to-date and suitable farming methods to increase productivity.

PRODUCTION

After a transition period dedicated to assembly, actual construction agricultural implements began in 1964 with the inauguration of the PO factory (10 hectares, 8 000 square meters under cover, investments 270 million CFA francs, 200 full-time workers).

The POUT factory has an annual output of 100 000 simple impleme for animal-drawn agriculture and thousands of various implements also use in agriculture, as well as all mass-produced parts.

SCOMA presents three of its agricultural machines:

the Bambey **millet thresher**

OTIVATIONS

ain production in the Sudanese-Sahelian zone in Africa is decreasing considerably, l local cultivation is virtually at a standstill. The millet and sorghum thresher is ispensable to substitute imported grain by locally-grown grain, and to satisfy the eds of expanding markets, i.e., bakery, breweries, cattle.

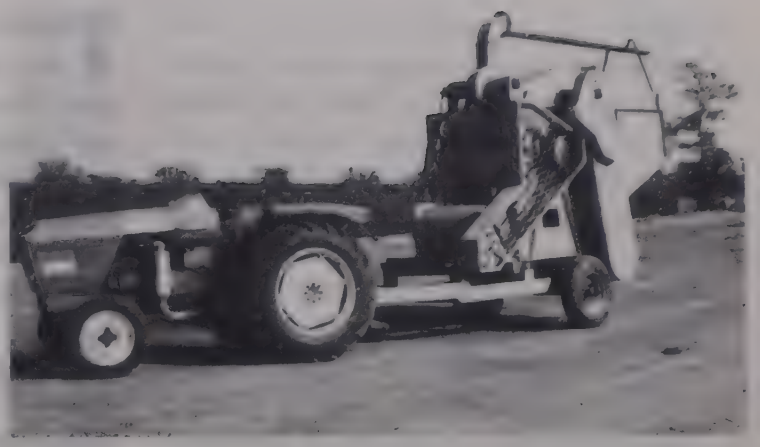
is with this goal in mind that the CNRA, National Centre for Agronomic Research Bambey, along with its research on plant improvement, has studied a machine to esh millet that from a sociological point of view, should also be useful in relieving men from their onerous daily routine. ***SISCOMA*** has built this machine.

INCIPLES OF THRESHING

is process – which has been invented, tested and approved – consists in sweeping the ears, rolling them and then crushing them between a roller and a bed, equipped th a grated lining and treated against abrasion.

HARACTERISTICS of the final model of the millet and sorghum thresher

nstruction in metal • Weight: 1 100 kg • Power of the agricultural tractor: 35 HP • ansportation – in tow behind the tractor • All the components are rotating and watertight bearings • The threshing parts are treated against abrasion • Output r hour: 1 000 kg of grain.



Millet thresher

per Eco-Cotton Seed-drill

• the **Eco-cotton Seed-drill**

The Super Eco-Cotton Seed-drill with its special equipment allows for the correct sowing of non-delinted cotton.

The perfecting of this equipment required much research and testing, both in the laboratory and in the field. This was carried out by the project office of the ***SISCOMA*** technical-commercial service. Tests carried out by IRCT confirmed the performance of the Super Eco-Cotton Seed-drill. Average results are the following:

- a maximum output of 40 to 45 kg per ha;
- placed into seed holes containing 4 or 5 seeds;
- at intervals of 20 to 25 cm;
- and some single grains between the seed holes.

Once the operation has started, between 50 000 and 55 000 feet per ha can easily be covered. The sowing is done at very shallow depth, which makes harvesting easier.

anning-mill

• the "engine-equipped" fanning-mill

Groundnuts beaten and ventilated, constitute an all-purpose product that still contains a high percentage of waste when delivered by the farmer. But quality groundnut selected seeds require varied strains, adequate ripeness and the absence of foreign matter or empty shells.

The groundnut fanning-mill easily carries out all these cleansing operations. ***SISCOMA*** in cooperation and with the support of IRHO and the CNRA of Bambey, has applied itself to perfecting this machine, particularly studies for the treatment of groundnut food products.

ECONOMIC INTEREST

The seeds are weighed and purchased from the farmer after having passed through the winnower, which cuts down the purchase price. Taking into account the surplus weight eliminated, savings are also made on handling, disinfestation and complementary powdering, and on storage (also reduced by 8 to 16 percent according to circumstances). Since the winnower considerably increases the quality of the seeds in the shells, less seed per ha is needed because its yield when shelled is higher.

The husband is the employer

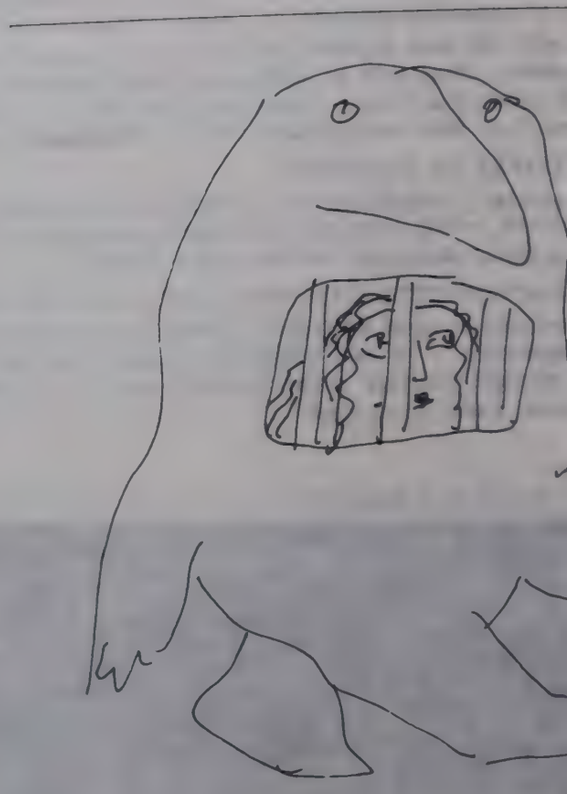
any trend toward a democratic family model is thwarted by the fact that the terms of employment are unchangeable

by Wajihuddin Ahmed

The word *development* looks like an inkblot to me. There are many strange pictures in an inkblot, one dissolving into another, and different people see different pictures. I would hate to carry such a fluid word to people who want to know exactly what you have to offer and what you expect. Yet, we do carry it to villages and hope that some meanings will sprout. Strangely enough, they do sprout. The word may stay murky but the man who brings it grows transparent; and so does the system he represents. People who have anything to do with him come to know that he may produce some money for repairing a dirty drain in the village but not for repairing the place of worship. He may propose cooperatives for farmers but he will do nothing to release them from the web of the moneylender. He may speak about the most profitable crop but he will not procure transport to carry it to the market. "This much and no more," is the message that comes loud and clear each time, even if it is unspoken.

We need not speak about development in broad and general terms and then wrap its meaning in dwindling instalments. It is perfectly possible to present definite tasks and clear targets for each group. Yet obscurity is not without its uses. By calling a spade a digging instrument you extend your choice to all instruments that can dig, even hairpins. That is why the word *development*, with its compounds and derivatives, circulates so much in the countries we call developing. When the Americans and others like them build a 200-mile long road for their farmers, they say that they are building a 200-mile long road. When Asians or Africans make a half-mile long track for a village, they say that they are "developing rural communications." When there are few things to make and do, the booming word *development* fills the void.

Wajihuddin Ahmed belongs to a farming community of Pakistan, and as a public servant has spent most of his life in dealing with problems of rural communities. He is now a consultant with the United Nations Fund for Population Activities.

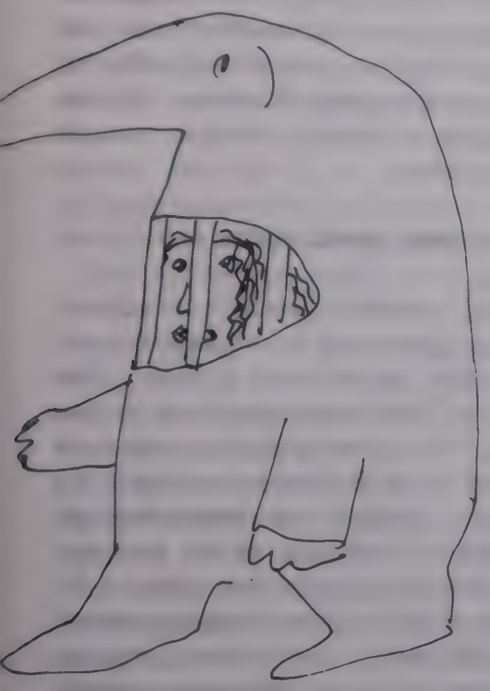


always behind

The size of the cake

Now that all of us are going to take the gift of development to village women, what should we point our finger at to make them understand what it is like and what it is worth?

There would be no need to point at anything if they saw their men having a grand time as monopolists of the thing called development. They would themselves demand a share of what men have. But an average village man's work is barely more productive and no more enjoyable than the labour of his female counterpart. What can she ask to share as an equal except poverty and drudgery?



Female demand for economic parity will grow when there are more and better opportunities for the rural group as a whole. What matters now is the size of the cake and not its male and female proportions. Perhaps village women would place village liberation first and join it as villagers, not as women.

Perhaps political motives require a conceptual division of rural development on a sexual basis followed by an attempt to correct an assumed imbalance. The same motives artificially partitioned rural and urban development and gave birth to the once popular vogue of rural community development.

Villages and cities are poor or rich together. If city people have a greater capacity to consume the produce of fields, farmers prosper. If villagers can buy more things made in cities, urban employment expands. It is, therefore, important to increase productivity in both sectors. But the philosophers of rural development ignored this interdependence and the need to strengthen it. It was implied that city people were doing quite well because they enjoyed more civic amenities than village folk. Rural community development, therefore, became an attempt to siphon some amenities to villages through official channels. It meant giving cement and money for paving streets or building drains, not increasing the community's own capacity to finance its needs. It did not strengthen the base of the village economy. Attention to symptoms replaced attention to the disease, and charity termed *development* became an excuse for not making the structural changes needed both in urban and rural sectors. I would not be surprised if the same fraud creeps into services and programmes for rural women, and they become an excuse for not changing the whole rural fabric. It will be suggested that the male leg of rural development is healthy but the female needs special attention. The special attention will be packed in a bulging bag and no one will be allowed to look inside. When the bag is finally opened, it may deliver a scientific recipe for making pickle, plus a lot of air.

Women are no longer lured by prepackaged development bags. You have to tell them precisely and truthfully what is on your rural development maps and then let them decide which maps they like best.

Three kinds of maps are likely to be offered: maps "appropriate to womanhood," with "royal roads" to perfect housekeeping and mothercraft. Be prepared to protect such a map, as well as your eyes. Village women have never felt inadequate as wives and mothers, and they do not believe that city ladies can instruct them in those vocations. Some maps may project an image of the village woman as an expert of feminine crafts associated with subsistence agriculture. Those maps may show commercial outlets for rugs and mats, eggs and honey. They would create a mild interest in some older women who may feel that something is better than nothing. The really attractive maps would outline a development that is least rural and least womanish. They would point to routes that lead away from the narrowness of village economy and its human relationships. They would present the kind of opportunities that may also interest young men no longer keen to inherit the plough.

A shadowy existence

These opportunities are to be found in the decentralized manufacture of processed primary products, consumer goods and light engineering goods — commodities that are labour intensive, resource-based and require simple technology, small investment, cheap or little fuel. A rural network of medium industry or agro-industry, producing both for export and home consumption, should teach the wearers of galabias, saris and sarongs to get into workmen's overalls and tinker with small machines. They should be absorbed not merely as unskilled or semiskilled operators, but taught repair, maintenance, supervision, management, accountancy, storekeeping, salesmanship and all other accoutrements of industrial enterprise. The purpose should be not just to employ hands but to help persons to be creative in a new kind of work association. The opportunity is greater when the production unit is small and responsibilities varied. The new work association should act as an instrument of social change, not just as a means of economic

improvement. The work association in the peasant economy is the peasant family. It keeps the female worker employed but invisible. She contributes her physical and biological energy to the work unit, is fed and clothed in return, but her identity as an autonomous being remains suppressed. She works but does not act. She minds children and farm animals, but her husband negotiates with the bigger world. An energetic and skilful pair of hands plus a productive uterus make a good peasant wife but not a fully creative and responsible person. The orientation of peasant women cannot be changed without overthrowing the totalitarianism of the peasant family.

A peasant woman becomes nameless as soon as she is physically and biologically mature. She is known as somebody's wife or as somebody's mother. To be recognized as a person in her own right, to become an acting individual, she must build a link with the world outside her family. The strongest link is economic, one of contributing skill and energy to the social whole and earning the material and psychological rewards of this contribution. Individuality grows out of interaction.

Peasant women the world over continue to live a shadowy existence. The two recent efforts to restructure rural life — land reform and the green revolution — have failed to draw them into wider economic networks. They remain enclosed within the work cell of the family as unpaid labourers, unrelated to larger systems of interdependence. Land reforms turned tenants into landowners, but titles of ownership were conferred on male heads of households. Credit societies and marketing associations were ushered in to replace the moneylender but membership was offered to the new proprietor and manager of land, not to the proprietress or manageress. Incentives to increase productivity motivated men and made them more ambitious. Decisions to use improved seed or chemical fertilizer were invariably male decisions. Women went along with plans and decisions made by men, perhaps shared benefits but not initiative and responsibility. The disappearance of the landlord and the moneylender and the availability of technical inputs promised a higher income for the family. But a higher income for the family does not alter the role and status of its female members.

Those women who make few plans and decisions in their daily lives can hardly take initiative and act with confidence as family planners. The basic issue, therefore, is altering the power structure in the rural family. Any trend toward a democratic pattern of family living is thwarted by the fact that the husband is also the employer and terms of employment are unchangeable. Employment of women in rural industry takes away the economic basis of male dominance. If the family ceases to serve as a labour pool for its male head and limits itself to sexual, reproductive and companionate functions, the distribution of power is likely to become less uneven.

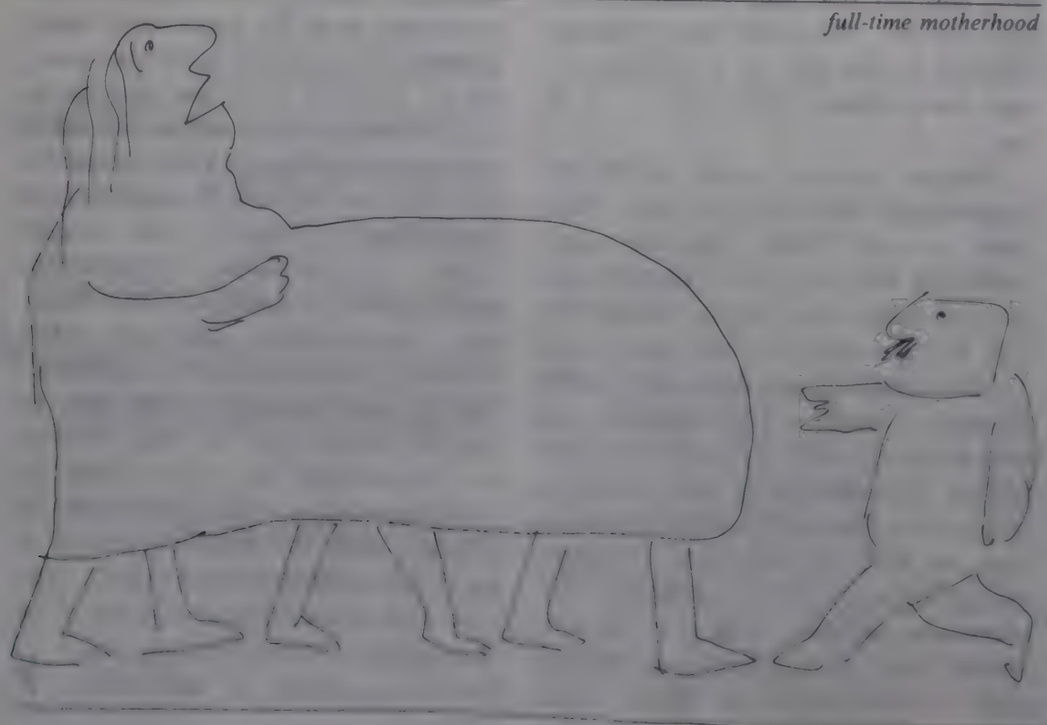
A cheap labour force

It is certainly possible to achieve greater autonomy for women even in a strictly agricultural setting. The Chinese have achieved it in their own way. The female farm worker in China is an individual working for and rewarded by the community, not an unpaid helpmate of the husband. But altering productive roles is far more difficult than increasing technical efficiency. The Chinese example may not be easy to follow everywhere.

Rural development in the women's sector, therefore, at best aims at teaching skills related to the work they are already doing as homemakers. What they really need are institutions giving them a wider work environment: polytechnic schools for village girls, banks for rural businesswomen, industries compelled or induced to employ a prescribed proportion of female workers, agricultural cooperatives with a fixed quota of female membership. If rural development torchbearers do not have the will or capacity to adopt such radical measures, they should pack up their pickle-making stuff and get out of villages as soon as they can. By staying on, they only perpetuate the exploitation of a cheap, manipulable and stagnant labour force.

Employment that defines a woman's work and income as independently her own either does not exist in rural areas of poor countries or is found only at very low levels. But if we do succeed in creating such employment, we can expect a series of

full-time motherhood



changes in values, attitudes and motives bearing on fertility.

Women's age at marriage in peasant communities, particularly in Asia, has always been very low, which contributes to their higher fertility. If daughters begin to earn and contribute to the family income, fathers are no longer anxious to marry them as early as possible. A self-supporting girl also prefers to stay longer in the marriage market, waiting for her best chance. Both these factors cause an upward shift in age at marriage, as has been observed in Sri Lanka and to some extent in the Philippines.[1]

Boys are valued highly in a peasant family: they provide labour, protection, security to aged parents and continuity of male succession. An Indian peasant, therefore, does not even think of birth control unless he has at least two sons.[2] Waiting for the required number of sons to be born increases family size, even for those who eventually adopt birth control. However, if a daughter proves to be an economic asset to her family through employment, parents may be persuaded to begin family limitation when the family is still small.

Control vests in men

Women who feel powerless, ineffective and aimless are observed to be less capable of controlling fertility and have larger families.[3] Self-confidence is identified as a characteristic of the person who takes to family planning.[4] Adequately rewarded employment outside the home can make women more conscious of their ability to control their circumstances through planned parenthood.

Full-time and lifelong motherhood is a widely approved role for women, whereas single-minded pursuit of fatherhood is not considered a legitimate occupation for men. Motherhood will cease to serve as the sole expression of feminine status and achievement if work roles receive reward and social recognition.

Physical demands and conditions of work outside the home are usually incompatible with a large-sized family. If employment is made attractive family size is likely to shrink.

Homebound women do not have easy access to family planning information and services. The place of work can be not only a convenient delivery point for assistance, but women working together can also learn from and be stimulated by each other's experience.

These inferences are not just speculative. Statistics confirm a fairly consistent association between women's employment and lower fertility, except for domestic service and other low-grade work. Employment is not a by-product of lower fertility as was once suspected.[5] On the other hand, among groups that do not provide employment opportunities to women, the little family planning that exists is almost exclusively the result of male initiative. No birth control is possible as long as all control vests in men.

Employment of rural women in industrial occupations can only be a part of a larger policy to disperse industrial production away from large urban centres. Thus, its demographic effect will extend to the distribution of population. Fewer people will drift to cities in search of nonexistent jobs. Villages will acquire facilities capable of attracting urban skills, resources and stimuli and thus overcome their stagnation. Rural economy will also become less vulnerable to disturbances caused by weather fluctuations and to pests and diseases. These disturbances bring floods of people from villages to cities.

The contribution that a change in the occupational status of peasant women can make to the solution of population problems is not hidden knowledge. Then what stops action? Who eats up the blueprints of change, which are prepared so often and with such enthusiasm? Male chauvinist piglets?

Asian women are prisoners of the family-based system of production. Unlike the Irish, they cannot leave it and emigrate to the U.S. and U.K. The system survives because it ensures low-cost production. If cotton, jute and coffee producers did not command the unpaid labour of their wives and children, the world would not be buying these commodities as cheaply as it does.

More work, less pay

Farm products must be exchanged for manufactures at ever worsening terms because industrial prices keep rising faster than agricultural prices. More bags of coffee and more bales of cotton must be delivered every year for each truck. To produce them, the peasant can make his wife and children work harder at their tasks without paying them more and not run the risk of a labour strike. He can also produce more children or take more wives to meet his labour needs. But the truck maker cannot cut his cost by reducing his wage rate. His labour is limited, expensive and organized. Thus, the family system of production facilitates a transfer of income from poor to rich countries.

If we were to turn unpaid agricultural workers into wage earners, either on farms or factories, who would pay the wages? Unless there is a transfer of income from the world centres of affluence to the peasant periphery, the change will not occur. But this process may be defined as the economic strangulation of the more fortunate. Peasant women are victims of something more than male chauvinism.

The central question, therefore, is one of paying the cost of demographic and economic change in the peasant world. Those who can pay must not only provide the pill but also finance the social changes that make the pill relevant. ◆

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[1] *C.L. Hunt,* Female Occupational Roles and Urban Sex Ratios in the United States, Japan and Philippines. *In R. Ford* et al, Social Demography. *Prentice-Hall, 1970.*

[2] *H. Sandhu and D. Allen,* Family Planning in Rural India. *Journal of Marriage and Family, 36.*

[3] *H. Groat and A.G. Neal,* Social Class and Alienation Correlates of Protestant Fertility. *Journal of Marriage and Family, 35.*

[4] *J. Fawcett,* Psychology and Population. *Population Council, 1970.*

[5] *J. Blake,* Demographic Science and the Reduction of Population Policy. *In R. Ford,* op. cit.

Is the family essential to the Filipino?

Western institutions performing certain functions of the family unit are not always transferable. A new solution may have to be found

by Gelia T. Castillo

Foreigners can readily be impressed by the high status of the Filipino women, who can be seen in academia, in business, in politics, in fashion, in government and even in international development and diplomatic circles. However, these are the "glamour girls" who are highly educated (some from finishing schools), articulate, sophisticated, and usually come from middle-, upper-income and nouveau-riche groups. But they are *not* the majority of Filipino women.

Less than 40 percent of Filipino women 10 years old and above are part of the labour force. Of the females who are not in the labour force, more than one half are occupied in the unglamourous task of housekeeping and more than one third are going to school. An examination of data on employed persons by major industry groups, by sex and rural-urban classification shows that about 30 percent of urban females are in commerce and almost 25 percent are in domestic service. In the rural sector, more than half of the employed females are in agriculture. Almost three fourths of women in farm occupations are unpaid family workers. Of the female agricultural labour force, about 70 percent are in rice and corn production. They transplant, weed, fertilize, harvest, thresh, etc. It is for this reason that labour-intensive technology poses a dilemma: it is mostly the women who bear the physical burden that goes with this type of technology.

Perhaps, in many developing countries today, trying to improve the status of women as a goal in itself is neither a major nor an important component of development plans. A more feasible approach might be to work toward this goal under the aegis of programmes in agriculture, family planning, education, nutrition, employment, etc.

Measures to improve the productivity of rice and corn farming would go a long way toward raising the status of a significant portion of the female labour force. But, most of the agricultural programmes are geared to the men while home economics programmes are for the women. Somehow, when we speak of farmers and farm labourers, we never think of them in the female gender. In agricultural extension programmes, the agriculturist works with the farmer and the home demonstrator works with the wife. It is relatively rare for women to be included in rice and corn production training programmes despite the fact that much of the production labour is put in by females. Women are often responsible for the care of pigs and chickens in the backyard but they are not recognized as livestock raisers. Although it is a well-known fact that Filipino women participate actively in decisions affecting the farm, and are almost always in charge of marketing farm produce, they have never been a deliberate target clientele for agricultural development programmes. Furthermore, the wife is the acknowledged treasurer of the family, so credit savings and investment programmes might be profitably addressed to them as much as to the men, even if only to counteract their veto. In the recently launched nation-wide cooperative development project at the village level, which includes a compulsory savings programme for capital formation, women are incidental in the sense that they are involved only in the absence of their husbands. Finally, while agricultural programmes are male-oriented, family-planning activities are primarily focused on females. This sex division in a social environment where there is no segregation of the sexes is rather unnatural and unproductive in terms of facilitating development efforts.

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An inquiry into the three-digit occupational categories of the 1973 National Demographic Survey reveals that women classified as sales workers include a majority of market vendors, peddlers and sari-sari store owners (very small retail stores with a one-table stock of goods, such as sugar, cooking oil, bread, etc). The label "Sales Workers" misleads one into thinking about department store salesgirls, insurance agents, etc. Among the craftsmen and production process workers are dressmakers and basket weavers, the latter of whom make very little money for working long and hard at their craft.

From servant to employee

Other revelations from detailed occupational classification may be found in the category of professionals who rank highest in the hierarchy of occupations. The majority are elementary schoolteachers. Although they are among the lowest paid of our government employees, they tend to inherit the operational end of rural development programmes (family planning, cooperatives, nutrition, health, food production, etc.), because they are the one group of female professionals that can be found even in the remotest villages all over the country. Quite often, they are the highest educated persons in the village and enjoy commensurate prestige. However, this has a corresponding price. Reports from cooperatives organized by the private sector show that, altough teachers are often chosen to serve as officers of the organization, they register the highest rate of delinquency in loan repayments. Their salary is far below the social demands made on their income by the position they occupy in the community. The importance of the female teacher's role can be better appreciated if one realizes that the primary school is the first and last school many rural children will ever attend. Any measure to improve the situation of the rural schoolteacher is a contribution toward the enrichment of the learning environment.

Domestic service in the urban areas is one significant occupation for village girls, especially from the poorest areas of the country. Professionalizing domestic services through some form of deliberate training might be one way of raising the status of Filipino rural women. At the moment, the recruitment process is characterized by many "exploitative" elements, and because the recruits are naive and unskilled, the exploitation goes on. Equipping them with skills and some degree of sophistication with respect to the prospective employment situation would bring about greater employability, bargaining power, dignity and self-respect, if not earning capacity. It would also assist the domestic helper in moving from the status of "servant" to that of "employee."

But of greater magnitude and challenge is the number of women who keep house and are not in the labour force. What is in store for them? If family planning and modern home conveniences were within their reach, what difference would it make to their life-styles? Of course, the elite does not need to perform these chores.

Even childbearing is made more pleasant by modern technology and facilities.

The relevant inequality

Having identified the women who need liberation, to push the issue of equality for women vis-à-vis men is to put the emphasis on the wrong inequality. Considering that Filipino women already have advantages in numbers, in life span, in college education, in marrying upward both educationally and occupationally, in control over household finances, and have at least an equal share in decision making on important family matters while maintaining the illusion of male domination, what deserves serious and persistent attention is the inequality among women. This is evidenced in rural-urban and regional differentials and disparities among women from different socioeconomic classes, including access to and practice of family planning. Women who are employed, live in urban areas, have higher education and nonagricultural occupations tend to have fewer children than those who are not in the labour force, live in rural areas, have lower education and are engaged

SELLING THE FAMILY PRODUCE
but marketing training is geared to the husband

in agricultural occupations. In general, the urban middle- and upper-class women who come from better developed regions enjoy more of the good things that women from the poor rural areas only dream about. One can say that within the same socioeconomic class there is greater equality between men and women than there is among women of upper, middle and lower classes. Therefore, class inequality is the more relevant one.

The Filipino women who take to the rostrum refer frequently to discrimination against women professionals to the extent of harping on limitations imposed by the use of masculine pronouns in legal documents, etc. These are issues encountered by very privileged women who have achieved sufficient status to be faced with such high-level problems. The majority of the women, however, are concerned with eking out a subsistence livelihood. It is entirely possible that allocations made for the further liberation of already elite women would create new barriers for poor women from the less privileged regions and sectors of society. We must not forget that this state of deprivation is not the monopoly of women. The men are equally underprivileged.

Emotional moorings

Women in their traditional biological role as childbearers are anchored to the family. When that role can be played by choice, it represents a considerable degree of female liberation, which has important repercussions on the family. Unfortunately, for most family-planning programmes, a pertinent question must be asked: where is the family in family planning? Because these programmes have yet to make a significant impact, particularly on the "stubborn" rural sector, the possible inhibitory effects of large-family values and the traditional attitude of women on the acceptance and practice of contraception are becoming more and more salient. The Filipino family, large and functionally extended as it is, provides social security, old-age pension, scholarships, unemployment benefits, nursery services, credit assistance, labour, capital, companionship to the unmarried, care for the sick, counsel for the troubled and most of all, love, affection and emotional sustenance without which a Filipino's life is meaningless.

Studies conducted by James T. Fawcett *et al* found that "the perceived economic benefits from children are higher and are spread more evenly across socioeconomic groups in the Philippines; large numbers of children are seen as less of an economic burden; there is *more emphasis on emotional* gratifications from children; restrictions on parents are less important."

Family planning will have consequences on existing premarital relationships, marital arrangements, the traditional double standard of morality, and in general, the role of women in society. Our children have to be socialized differently if they are to adjust to the new rules of a contraceptive society. In the meantime, whether or not reduction in family size takes place, there is an increase in life span with women living longer than men. What about widows? What about the emotional moorings provided by many children, grandchildren, nieces and nephews, brothers and sisters? Do we need the present numbers to sustain us psychologically? The Filipino seems to suffer from loneliness in being alone while the American and the European treasure their privacy. Is this related to the phenomenon of large families in small dwellings where privacy is unknown? In this connection, there seems to be no direct translation of the word *privacy* in Filipino. The closest to it is *to be alone* and that is to be lonely. Fawcett *et al* recognize that "the value of family cohesiveness and continuity presents special problems." They venture to say that "the obvious policy recommendation would be to weaken the importance of the family; in fact, however, there is considerable sentiment to reverse the secular trend in that direction, because of the central role of the family in the total social structure. Perhaps public policies can only facilitate the idea that not everyone has to have a family, and that positive interpersonal values can flourish also in the context of nonfamilial life-styles." What is a nonfamilial life-style for the Filipino?

To promote employment and productivity, there are systematic efforts to develop labour-intensive technology, multiple cropping, etc. An interesting question arises from cursory observations regarding these efforts: do large families encourage multiple cropping or does multiple cropping stimulate large families? Research has also shown that the Filipino family survives because of multiple breadwinners holding multiple jobs and here again, children make all the difference as to how multiple a family can be. The housewife and her daughters are no exception to this enterprise. It is also often said, either casually or seriously, that if one does not have children, what is there to work for? In other words, our major if not entire reason for being and becoming revolves around the family, and there is no family without children. But wouldn't two children suffice? What alternative institutional devices might be evolved to take care of the functions performed by a large family? A very preliminary analysis made by the Population Institute of a the University of the Philippines suggests that a new stage in the female life cycle will come about by the year 2 000. When infant rearing ends early and grandchildren arrive progressively later, a period of mature independence emerges, which is characterized by the absence of direct childrearing obligations. What do we envision for the woman in that new stage?

Nothing to offer

Over the years, Western developed societies have evolved an elaborate system of organizations, institutions and services to perform functions otherwise carried out by children and the family in our society. In our context, what are the alternatives to children and the family? It is easier to peddle contraceptives than it is to create the social innovations that would meet the simultaneous demand for a contraceptive society existing side by side with a family system providing social security accompanied by love and affection. Ironically, the developed societies that are showing us the way to contraception have nothing to offer us by way of a model to achieve this. We have to work it out for ourselves.

Bandaranaike:

Women will have greater opportunities to participate in policy formulation

ceres As the world's first woman prime minister, did you encounter reserve or hostility among world leaders who might think that international leadership is a male preserve? Have they now come to terms with the presence of women in the top forums of the world?

Bandaranaike: In my experience, the participation of women in the international policy-making process was not viewed by world leaders with any feeling of resentment or alarm but as a natural development in the course of progress. Although many women have not yet had the opportunity, the few who have assumed roles of political and international leadership have proved beyond doubt their ability to carry out their responsibilities as efficiently as their male counterparts. I am happy to say that the reaction of fellow leaders from all parts of the world has always been one of utmost cordiality and cooperation rather than of indifference or hostility.

ceres Is there a special role you can play in international affairs because you are a woman?

Bandaranaike: As I have already told you, there are still only very few women who have had the opportunity to play a leading role in international affairs. For that very reason, a woman certainly has a special role to play. Interest in national and international affairs, at least for the developing countries, has shifted more and more toward issues of population, the health of mother and child, adequate food supplies, inflationary cost of living and problems of nutrition. One of the priorities of the World Food Conference for example is to improve the nutrition level of the most vulnerable 400 million people of the world. To be solved, these problems require qualities not only of the head but also of the heart. A woman can play a more effective role as these are issues of primary concern to her and very much within her own experience.

SIRIMAVO RATWATTE DIAS BANDARANAIKE
Sri Lanka Prime Minister

ceres Have the years of leadership changed you in any way? Do you find yourself "thinking like a man"? Has power made you "more of man"?

Bandaranaike: I just do not know what it means to think like a man. So how can I answer you.

ceres What do you think of women's lib? Should there be a concerted international drive for equality between the sexes?

Bandaranaike: I certainly stand for equal rights and status for men and women in all fields — economic, political, legal, social and cultural. No discrimination on the grounds of sex should be permitted in the exercise of these rights. Therefore, I support the broad goals of women's lib. The liberation of women should really be in terms of removing the irrational prejudices and discrimination that exist.

I do see an important role for international action in liberating women who, in most parts of the Third World in particular, are still labouring under various prejudices and disabilities and are unable to realize their best selves or to play their due role in social and economic development.

ceres Since the days when you were a prominent member of the Lanka Mahila Samithiya,* have you seen a cultural change involving the role of women in society?

Bandaranaike: I was closely associated with the Lanka Mahila Samithiya in the 1940s, the 1950s and even

the 1960s. We were greatly concerned with raising the quality of rural life, particularly for women. Looking back, what strikes me as the most important cultural change is the expansion of educational facilities and the vast improvement in literary standards among women. It was in the 1940s that Sri Lanka started a system of free and universal education. With education, women have become more concerned with wider social and cultural issues. Women are no longer looked upon as mere dependents as they were a few decades ago. Improved educational facilities have raised the level of jobs available to them. The number of women going in for higher education has shown a marked increase, as has the number taking to professions (engineering, medical, legal, etc.) that were at one time considered by society to be male preserves. If I am to speak of the role of the Mahila Samithi itself, we were able to change some of the attitudes of women who came into contact with this organization. There were many, and they were able to develop a new awareness of their social responsibilities.

ceres Do you think it is inevitable — or impossible — that a woman will become, say, prime minister of the United Kingdom, president of the United States or will have the most powerful positions in China and the U.S.S.R.?

Bandaranaike: I would not make a prediction as to the inevitability, but I would certainly not consider it impossible for a woman to work her way up to any of the positions that you mentioned. Whether it is the U.S. in the West or China in the East, the traditional prejudices and fallacies regarding female participation in positions of leadership are fast breaking down. Greater opportunities are being opened up to women to participate in policy formulation at the highest levels. In the U.K. in particular, female leadership is not something novel: women have made their influence felt from many top positions, including monarchy.

ceres What is the role of women in the formulation of international population policies? I believe Sri Lanka was the first country to ask for United Nations technical assistance for family planning. How has the world's attitude to this area of development changed since its early resistance to the idea?

Bandaranaike: Women have a very positive role to play in the formulation of population policies at all levels. In both developed and developing countries, they are getting increasingly involved at official levels as well as through voluntary organizations. Family nutrition and health, the effect of frequent childbearing and ill-spaced pregnancies on the health of the mother and the child are issues that directly concern women.

My late husband was one of the first to raise the population issue in a world forum — the World Health Organization — at a time when the United Nations had taken little initiative in this important field. Over the years, the UN has recognized the perils of an uncontrolled population expansion and the need for a clear-cut policy. The Declaration on Population was signed in December 1966 when the right to decide on the number and spacing of children was recognized as a basic human right. 1974 was chosen the World Population Year and the World Conference was held under the auspices of the UN in August 1974.

In Sri Lanka, the significance of family planning as a health measure has been recognized, and the effect of frequent childbearing on the individual and family health is being given increasing attention. We have launched a comprehensive national programme on population with the health of mother and child as its main theme. WHO, UNICEF, UNESCO and ILO are taking an active role in our programme by providing us with the necessary assistance and guidance.

ceres Two international issues with which you have been identified recently have been the Indian Ocean Peace Zone and the world fertilizer fund idea, both of which you initiated. How are these developing?

Bandaranaike: The Indian Ocean Peace Zone proposal was formulated within the context of our intimate concern with the policies of non-alignment. The Indian Ocean is an area where the main concern of the countries is with economic and social development. We cannot fully use our resources and energies to improve the standard of living of our people if we are distracted by military insecurity in the area as a result of outside involvement. The response has been very encouraging, and more and more countries are realizing the benefits that could be obtained from this type of disentanglement. The United Nations has also shown increasing interest in the concept. It obviously takes time for this kind of proposal to be generally accepted, but I would say that the outlook is extremely promising.

As for the world fertilizer fund, this is a proposal I made when I inaugurated the 30th Session of ECAFE in Colombo in March 1974. I am very happy about the response that it has received. The whole purpose was to enable developing countries to continue the green revolution and the modernization of agriculture by the introduction of high-yielding varieties without the type of constraints that have emerged recently. Food is obviously the most critical area for developing countries like ours, and the adequacy of fertilizer supplies could make all the difference between hunger and plenty. The FAO Council established the International Fertilizer Supply Scheme (IFS), and the World Food Conference discussed the formulation of a world fertilizer policy. This is the first time that international agencies are talking in these terms. There is much to do in this area, as we have pointed out in the papers that we have submitted to various conferences. The IFS is a good start, but there are other things to be done. ◆

** A long established national women's association with a network of member groups throughout the island, which is affiliated with the Associated Country Women of the World* (Ed.)

Blurred image

the African woman is expected to be the guardian of tradition while moving with the times

by Maryse Condé

There is a lot of talk these days about women's liberation. It seems to be accepted that, before uniting in the struggle against the forces of oppression and obscurantism, man and woman must first become equal partners. The theory of the complementarity of the sexes appears at best outdated and at worst dangerous. The Third World woman, in particular the African, is all the more sensitive to these new standards since an entire literature has been devoted to obscuring the role she used to play and the place she traditionally occupied in society.

The African woman is the victim of a persistent misunderstanding, as a result of the false image that explorers, missionaries and administrators, with very little comprehension of native social realities, have imposed upon her. Mungo Park is the only one who paid homage, albeit indirectly, to her spirit of independence and her goodness. Travelling between 1795 and 1797 in the region that is now Mali, he tells how he met a woman from Ségou who, seeing him alone and not knowing where to turn for help, offered him hospitality and shelter. With this exception, the first travellers, shocked by polygamy and ignorant of the fundamental principle of division of labour in African societies, give a picture of the woman bearing little relation to reality. Thus, for Ca'da Mosta, who visited Africa in 1457, the principal role of the king's women consisted in providing him with food when he was travelling, "because the women who live in the places where he is going entertain him with all his suite." As a result of reports from observers so lacking in objectivity, the African woman is presented as downtrodden and humiliated.

It is tempting to reply to such generalizations and simplifications in the same vein. However, one must be careful not to do so. It is true that some African societies — for example, the Bambaras of Mali — seem relatively misogynistic. "Woman is a bag," says the proverb, "anything can come out of her." But, this statement is not without ambiguity and betrays an almost superstitious belief in woman's uncontrollable creativity and spirit of initiative. In the Bambara tradition, is it not the goddess Muso Koroni who organizes the universe, giving man agriculture and thus enabling him to live? And with the Akans, the mother-goddess, the Moon, a female figure who created the Sun, a male figure, retained her superiority for generations. Finally, it must be remembered that women have always played a dominant role in the trade- and barter-oriented Yoruba societies.

Playing the white man's game

Even the duality of the feminine image in Africa has been misunderstood. "The mother is golden," says a Yoruba proverb, and Europeans conclude that such an idealization of the maternal function implies a more or less deep-rooted disregard for the other aspects of woman's personality. But this idealization should be understood within the context of polygamous societies where the father, often far away, does not form part of the basic family cell with the children; moreover, it is linked to a profound respect for the mystery of life renewal. In short, it does not at all imply denigration of the secondary attributes. The African woman in traditional society was unaware of the danger of becoming an erotic object.

The African woman's status and image in traditional societies cannot really be compared to those of the European woman because in the latter case reference is made, consciously or not, to the upper layers of society without taking into account either the peasantry or the proletariat.

Paradoxically, the progress of colonization and the growing influence of Europe have led to a debasement of the female condition in Africa. Such a statement may appear gratuitous when one thinks of the importance atached by missionaries and certain liberal spirits to what they called female education. First of all, considering the resistance of African families who, even if they were prepared to let their sons "play the white man's game," were determined to protect their daughters, the number of educated girls has long been smaller than that of boys. This immediately created a gap between the sexes. It was not enough for man to have left woman behind in the race for education; he also had to change his image of himself and his companion. The illiterate woman found herself condemned to play a secondary role to her more fortunate sister. The danger was such that certain countries, Ghana for example, had to promulgate laws protecting uneducated wives who were suddenly considered obstacles to their husbands' careers.

This so-called promotion of woman, greeted with enthusiasm by some people, provoked a reaction. A new trend was quickly discernible: comparing the sophisticated, superficial city dweller with the village woman, symbol of purity and authenticity. Okot p'Bitek, in *Song of Lawino*, crystallizes the new tendency: ›

Maryse Condé, *from the French Antilles, is* chargée de cours *at the University of Paris.*

PEASANT IN CASAMANCE, SOUTH OF SENEGAL
will she also be influenced by Western mirages?

Brother when you see Clementine
The beautiful one aspires
To look like a white woman;
Her lips are red-hot
Like glowing charcoal
She resembles the wild cat
That has dipped its mouth in blood
Her mouth is like raw yaws[1]
It looks like an open ulcer
Like the mouth of a fiend

It goes without saying that such a dichotomy is just as superficial and, in the last analysis, dangerous as the simplifications of the missionaries who saw every African woman as a "beast of burden." Women in rural communities are no safer than men from the temptations of the West, even if lack of means prevents them from yielding.

In African tradition, a woman has well-defined occupations. Either she helps her husband in the fields or she goes in for trade. In some communities, she used to practice a form of fishing in shallow water or handicrafts such as pottery and wickerwork; but those were not her fundamental tasks. The woman trained in the Western school also takes up well-defined employments. The first generation was mainly midwives and teachers, soon convinced of being an elite. The second prides itself on numbering professors, doctors, lawyers, even ministers, although in the latter case training and function don't always go hand in hand.

Folkloristic features

In a paradoxical way, it is often the women seeming to compete with the West who champion certain African values. Some of them choose, for example, to wear national dress while others adopt traditional hairstyles. No one should be taken in by such posing. The African identity that they pretend to uphold amounts to nothing more than keeping up certain features and particularities, which could be called exotic, even folkloristic. They have adopted a fundamentally European and bourgeois way of life; in other words, their idea of themselves, their relationship within the family and between individuals are completely foreign to African tradition. Great consumers of imported goods and products, they have introduced the notion of female social success and, in fact, consecrated the division of the sexes. The press and mass media publicize their lives and cite them as examples, and nobody realizes that the emancipation for which they are bearing the torch is based on the acceptance of a mistaken premise, that of the inferiority of woman in the traditional milieu.

In their own homes, with their children, these women are actively spreading Western values. In a word, under brilliant exteriors they are the category most dependent on the former metropolitan country. However, they are the model for women in other social classes. They have solved material problems by keeping servants or poor relatives, and they are therefore free of so-called humble tasks. It is obvious that the women who imitate them without being in the same financial situation will come up against numerous problems, of which not all the consequences are economic. Deprived of objects they consider indispensable, they dream up stratagems for acquiring them; at the same time, they become sharply aggressive toward men as suppliers of consumer goods. Marriage appears as an obstacle, maternity a burden. These tendencies could be withstood were it not for the fact that the whole of African society finds itself in confusion. African associations and feminist groups are too often hinged on political parties whose main interest is to gain the support of women at all times. This means that no education takes place. In the worst cases, women are invited to promote ideologies in whose formulation they have had no part.

With the beginning of industrialization in African countries, a new category of women is emerging: the workers. Indeed, in some countries, the labour force of certain industries (children's clothing, manufacture of exercise books...) is exclusively female. The African worker confronted with the machine automatically has to modify her traditional behaviour and her European image of herself, since the latter is essentially middle class. However, the worker's most important problem is certainly not one of identity, but of organization: how can the

savour of family life, an interest in others and leisure time be preserved, despite an exhausting job? The worker will quickly discover for herself the concept of social classes, said to be foreign to Africa. She will realize that her personal appearance is less important than the care of her children, the existence of nurseries and quick, cheap, communal transport. Thus, she will see the national dress, which some people insist on wearing, as a hindrance to her work and will reduce it to its proper role — that of accessory. She will quickly understand that the real problems are elsewhere, and depend on the sociopolitical organization of Africa.

The woman least affected by the ups and downs of present-day Africa is not, in our opinion, the woman of the rural communities, which have lost most of their men to the towns. The best preserved is the one who has taken up that traditionally approved activity, trade. Of course, the framework of her activity is changing from the market to the shop, even the boutique. But the relative independence ensured by this profession, the opportunity for personal initiative and the respect of others help the woman to maintain a healthy relationship with herself. The woman trader is a fundamental feature of African societies. The success she achieves does not depend on education, and she does not need to change her way of life and start pushing new values. It is true that existing political parties and systems frequently make use of her, but she is not their creation.

Process of alienation

The African woman — more fortunate than the West Indian, who is so often obliged to emigrate — has never known exile. She is however the victim of it indirectly, when one considers the growing number of emigrants from French-speaking Africa. It would be interesting to study the upheavals provoked in family and social units by this haemorrhage of men, to see what responsibilities fall on the wives who stay in the country. But the total dependence of these units on Europe, through the emigrant workers, is immediately obvious. Back home, displaying a few purchases of second-rate quality, the emigrant worker is only going to lend impetus to the process of alienation and depersonalization that is already under way. He will do his best to reinforce the European myth. In his own community, this victim will play the hero.

Thus, the problems facing the African woman differ according to the social class to which she belongs, and consequently according to the means at her disposal for solving them. They are closely linked to the problems of men, since woman is not an isolated entity. She is an integral part of a political and social context. In short, the problems of the African woman are those of the whole continent. The words *development* and *underdevelopment* are heavy with meaning. Economists and political historians have already proved that the second is nothing but the reverse of the first, and that there would never have been underdeveloped countries but for the exploitation and appropriation of their natural resources by the developed countries. But perhaps it has not been sufficiently emphasized that these words imply the acceptance of certain models without question. What is called the "struggle against underdevelopment" doesn't stop at the building of dams, bridges, housing, hospitals and schools. These technical achievements are not without commitment.

If woman is in a particularly critical position, it is because of the contradictory and confused image she has of herself and projects to others. This image determines the role she is expected to play, with her own approval. She is supposed to be the guardian of tradition. She is also expected to move with the times. She must be mother, pillar of the home, bearer of life; she must also be seductive, even though seduction is associated with the idea of sin. In a world where everything is changing, it is reasonable that she should do the same: but, since people unconsciously regret and fear this change, it is held against her. Can the African woman — and man — find a lasting equilibrium? They certainly can.

The heritage of the past

To achieve this, tradition must be better known and understood, and brought back into life at all levels of the national conscience. There is no point in glorifying the heritage of the past if it is denied and contradicted in practice. It would also be necessary to reappraise the subjects taught in school; cultural policies taking national realities into account should be established, and the price paid for what is called development should be weighed very carefully.

Just as there is not one culture, but different cultures, not one civilization, but civilizations within which people establish harmonious relationships with the visible and invisible world, so various forms of development are possible. But this idea seems utopic. It is generally thought that colonization is an irreversible fact that has determined the future of African countries. No one thinks it is possible to abandon the road already mapped out. Frantz Fanon in *Les Damnés de la Terre* urges us to try. "No, we don't want to catch up with anyone. But we want to walk all the time, night and day, in company with man, with all men. It is important not to string out the caravan because then each rank can hardly see the one in front of it and men, who don't recognize each other anymore, meet each other less and less, speak to each other less and less. The Third World must begin the history of mankind all over again." It is to this task that the African woman should be invited, so that she can show her spirit of initiative and independence and her own particular gifts. Her past history proves that she has much to contribute to the restoration of the true face of Africa. ◆

[1] *Infectious tropical disease caused by* Treponema pertenue.

Pereira: There was no room for sex discrimination during the struggle

ceres PAIGC (Partido Africano da Independencia da Guiné e Cabo Verde) has taken a particularly strong position with regard to the participation of women in the liberation movement and in the process of social and political development. What is the basic philosophy behind this?

Pereira: The experience of other countries having struggled for independence has shown that to achieve freedom it is necessary to mobilize all those forces that have been suppressed or discriminated against, without regard to colour or race, sex or age, religion or cultural background. When the party was established in 1956, it included in its programme the need to respect all people, according to the Declaration of Human Rights. The strong repressions that followed made it necessary to start an armed struggle, and there was no room for sex discrimination.

ceres How was it possible to mobilize the women?

Pereira: In fact, it was the women who were the easiest to mobilize. They realized that this was a great opportunity for their liberation. They knew the attitude of the party, and understood that, for the first time in the history of our country, they would be able to count on political institutions to safeguard their interests. This was important, because they also knew that the burden of colonization had rested most heavily on their shoulders. In this respect, we can talk about various forms of colonization — by the colonizers themselves, by the men and by the tribes.

ceres What influence did this have on the men and their mobilization?

Pereira: There are many examples of women contributing directly to the mobilization of men. They often pressed their husbands or fathers to join the fight, insisting that if they did not do so, the women themselves would take up arms and the men could stay home to do the cooking!

ceres Can you give specific examples of how the women contributed to the liberation struggle?

Pereira: They lent their homes for secret meetings, hid comrades who were being pursued by the police, transported secret documents through dangerous zones, supplied food to the guerilla bases, and so on. On the military side, young women joined the guerillas from the beginning of the armed struggle. They learned how to use weapons, and to take part in the security service. In 1964 — a very difficult moment for our party due to the liberation struggle of the island Como and the subsequent invasion by the Portuguese — the women resisted being evacuated together with children and old people. They said they would rather die than leave the island. It was the women who kept the provisions moving from the mainland to the island, including ammunition and food for the guerillas during a struggle that lasted 75 days. Another direct contribution was the guaranteeing of food to the population: since the men of Como had had to take up arms, the women were obliged to cultivate the food to feed the population.

FRANCISCA PEREIRA
Governor of the Bolama Region, Guinea-Bissau

ceres What other tasks fell on the women?

Pereira: Most of the people working in sanitation were women. Women also played an important part in educational activities, in telecommunication, in the local armed forces and of course in the people's militia. Liaison between the liberated areas and the centres still dominated by the colonialists was to a great extent undertaken by women. Above all, there were numerous women in the political setup.

ceres Would you say that the contribution of women to the liberation struggle has stopped discrimination against them in Guinea-Bissau?

Pereira: No, there is still discrimination against women in our country. However, this is caused by husbands or fathers who have perhaps not yet understood the principles of the party concerning women. I would like here to refer to our Party Programme, which says: "Equality of citizens before the law, without distinction of nationality or ethnic group, sex, social origin, cultural level, profession, position, wealth, religious belief or philosophical conviction. Men and women will have the same status with regard to family, work and public activities."

And, again: "Defend the rights of women, respect and make others respect women (whether as children, young girls or adults), but persuade

the women of our country that their liberation must be their own achievement on the basis of their work, dedication to the Party, self-respect, personality and decisiveness toward everything that can act against their dignity."

ceres The women outside Guinea-Bissau are anxious to see how the principles of PAIGC will be put into practice after independence. Do you believe that there may be more difficulties ahead than during the struggle?
Pereira: I do not think there will be more difficulties than we have already had. But, it still will be necessary to convince the women themselves that they have much to contribute to the development of the nation. Of course, if a woman is a homemaker, she is already contributing. But, her contribution can become more effective if she takes greater responsibility and gives more of herself to the nation. In addition, nothing is better than if women can become economically independent. We can talk about discrimination against women and about domination by men because the woman does not have economic independence, because she depends on her husband.

ceres Is it enough to persuade the women?
Pereira: We also have to work on the men. They must be made to understand that, if their wives happen to be absent from home, they have not left for good but they are serving their country. In addition, we have problems between women and their tribes. According to custom, young women are often prevented from deciding upon their own fate in life. In many tribes, it is the father or an uncle who decides whom the girl is to marry and when. The continued assistance of the party will be very important to fight these customs. We know that, after the liberation war was over in several other countries, these problems still kept women from participating in the social life and in the development of their country.

ceres In practice, how will the party continue the work for the improvement of women's conditions?
Pereira: The party wants women to participate at all levels. By law, at least two out of the five members in the basic political and administrative unit, the Village Committee, must be women. Further the party intends to create special women's organizations. There is also a Women's Commission with ten members. We intend to put into practice a number of issues that are indicated by the party, but it cannot be done by the party alone. The women themselves must take responsibility. And there is much to do. When speaking about a new nation, a new life, it is imperative to start with the woman. She is the true key to a new life, because she is the educator of the new nation.

ceres Can you give concrete examples of what must be done?
Pereira: The first thing is to make women literate, to educate them and then to train them in various professions. Of course, we will need time to put all these things into practice.

ceres We know from other countries that the more women take part in production away from home, the more likely it is that they have to leave their children at an early age. How can you ensure that, when women are urged to contribute in new ways to the development of the country, they may at the same time maintain and exert their biological rights, so to speak?
Pereira: There is nothing that says that women have to lose their femininity if they participate in social, political or communal life. The participation of a woman in production does not mean that she cannot be a mother. Both women and men can take part when one begins to mechanize production. We know that what is lacking in our country is the development of agricultural tools. Therefore it is necessary to have big families. In our country, a man might have four, five wives, and each of them might have four, six or eight children. Of course, childbearing prevented many women from taking part in productive life. However, with the modernization of agriculture, this situation should change, and the women will be in a better position to take part in production.

ceres In some countries, mechanization of agriculture has been shown *not* to be beneficial to women, because it was developed particularly for cash-crop agriculture. Traditionally, it is food production that has been the task of women in many places, and this has been continued in traditional ways.
Pereira: My personal opinion is that it depends on how you structure the education of agricultural technicians, and how they will utilize the agricultural tools. If there is discrimination during the training of technicians, it may be that the men will get more advantages when agricultural techniques are prepared. But, if education of agricultural technicians is equal — and we already have both male and female agronomists and agronomic assistants — I cannot foresee problems.

ceres How can people be educated for equality between the sexes?

Pereira: I believe one has to start from childhood. And schools must be mixed schools, at all levels. If we start educating children when they are very young to respect each other without distance between the sexes, it is possible to arrive where our great comrade Amilcar Cabral wanted us to arrive. He was the one who drew up the lines of our party's programme about equality between sexes, and the necessity for men and women to understand each other and work together. ◆

This interview was made in January 1975 by Ms. Wenche Barth Eide, *of the University of Oslo, during a visit to Guinea-Bissau.*

Network for survival

by Nici Nelson

Mathare Valley is 6.5 km north-east of the centre of Nairobi. The population, estimated at 50 000 squatters in 1970, lives on the steep slopes of the river Mathare valley. The inhabitants include a large number of unmarried women. There was a small rural colony there during the late 1940s and early 1950s. The colonial Government considered it a hotbed for Kikuyu Mau-Mau activities and, in 1952, the houses were levelled and many of the inhabitants thrown into prison.

In 1961, people returned to Mathare, built houses of wattle plastered with clay and made a small income from hiring out rooms or illegally brewing maize beer called *buzaa* for workers from the various camps and institutions in the neighbourhood. In recent years, the neighbouring regions of Eastleigh and Pangani have completely changed. The Indians have left, and the Indian houses, which used to be occupied by one family, have been transformed into units sheltering several families, each family occupying only one room. At Eastleigh, many of the men who are single or whose wives have stayed in the country share rooms, which also considerably increases the market for beer and prostitution.

The rigidity of rural-urban migration and the low per caput income in Nairobi have created, as in most urban zones throughout the world, a high demand for cheap lodging. The people of Mathare reacted in 1968-69 by regrouping themselves into cooperatives called "companies" to build a large number of wood units roofed with sheet metal on the edges of the valley and to rent them. This has doubled the population of the valley.

After a short wave of demolition in 1970, the municipal council embarked on a planning programme for the area as it already existed. Like most squatter zones, Mathare had no well-defined layout and was not provided with access roads, water, electricity, schools, drains or garbage disposals. Overpopulation made the area a sanitary risk. In the last two years, the situation has improved remarkably.

Mathare is a lively place, full of activity. The houses are piled up and leaning against one another, all in brown clay and cardboard; the alleys separating them are narrow as corridors, carelessly arranged, following the whims of successive builders. Haphazard conglomerations of courtyards brim with activity. Children play, women wash, cook, or plait their hair; clients drink beer in the open air; women fry flour for the brewing of the beer; groups chat among goats and hens.

The customers invade Mathare in the evening and at the end of the week. They stroll through the streets looking for beer, friends and women. Wherever they see an open door, they enter without saying the traditional *Hodi* and sit down on the benches. They chat, argue, drink and continue on their way. They are the soul of Mathare.

The women work hard; they have an interminable series of household chores. But for many of them there is also the work of beer brewing, and the long, tiring hours of serving clients in the room where the children eat and sleep. They must run out for cigarettes, bring more beer, feed the baby, put the children to bed behind a makeshift screen; there are long hours of waiting, disputes with drunken clients and, late at night, jealous "husbands" who beat them.

Police raids sow panic. Clients and inhabitants alike leave the houses and stay in the streets, because anyone surprised in a room drinking illegal beer is arrested and fined 50 shillings. If the police find only beer, they content themselves with pouring it away. Every woman is constantly asking herself the same question: "Will it be my turn today?" And later on, if her beer or her fermenting flour or her frying pans or containers have passed unnoticed and been left intact, she exclaims joyously, *Mungu amenisaidia* ("God has helped me!").

Defining the single woman

In Kenya, the process of urbanization is moving faster and faster. Nairobi grows at the yearly rate of 7.8 percent, or an increase of 60 000 inhabitants, and it is estimated that it will reach 2 million persons by the year 2000. This urbanization has two interesting characteristics: the stabilization of the male rate and the increasing number of independent (unmarried) women.

Thus, Nairobi harbours a growing number of single women. It is almost impossible to estimate their number because of false declarations of marriage to the census takers. There have been two censuses at Mathare giving an estimate of the number of single women. The Housing Research Development Unit Survey of 1969/70 estimated they represented 25 percent of the population. A census taken by

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caught between town and country, the women of Mathare Valley have created bonds of solidarity enabling them to eke out a living in hostile surroundings

the municipal council in 1967 made a higher estimate, about 45 percent. Of course, the problem of defining "marriage" arises. Here, "single" women are those involved in any form of concubinage because of the lack of stability in their relationship and the fact that, although they are helped by several men, they are ultimately responsible for ensuring their own and their children's livelihood, and for bringing up the latter.

There are numerous reasons for this increase in the number of women living alone in Nairobi. Many women say they have lost their husbands during the Mau-Mau troubles. In the majority of Kenyan races, the land law is conceived in such a way that a woman can only own land through her husband. An unmarried or divorced woman has no means of earning a living in the rural areas and is dependent on her relatives. It may be — although this is an unconfirmed hypothesis — that as the monetary economy of Kenya becomes stronger, the enlarged family groups will be less and less willing to take responsibility for divorcees and other categories of single women. The new sexual liberty of the young has brought about an increasing rate of premarital pregnancies, and these girls seldom succeed in persuading their boyfriends to marry them and recognize the child. This often means that a girl loses all chance of getting married; particularly when, trying desperately to ensnare another lover, she becomes pregnant for the second time. She is then considered a prostitute and has little chance of regularizing the situation and becoming a wife. The only resort left to the landless woman is to go the town. There, if she is at all educated, she can take a typing course or get a job as a salesgirl. If she has no education, she enters the bitter struggle for a limited number of jobs and becomes a nanny or a domestic servant; if she doesn't succeed, she can brew beer illegally or get money from men, either by establishing a strict client-prostitute relationship or by a concubinage relationship.[1]

The elderly women (over forty) are generally divorcees or illiterate widows who came and built houses in Mathare at the beginning of the 1960s. Those who have children live with them and their grandchildren. They provide for their own needs by brewing beer and renting out their houses. In the old sector of Mathare, an astonishing number of houses were built by women. Out of the 65 houseowners who were allotted a house under the 1973 Mathare replanning programme, 45 were women.

Buzaa is one of three drinks made by the people of Mathare. Its principal ingredients are maize flour (*unga*) and yeast (*kumera*). It is extremely popular with the urban Kikuyu because it is cheaper than bottled beer and is "as nourishing as food."

Several secondary occupations have sprung up around brewing. First, there are the people who earn their living by selling *unga* and *kumera*. The richest or oldest women buy water from the water seller or hire a filterer (a man who asks three shillings for filtering a container of *buzaa*). Most women consider this a luxury, which they only allow themselves when they are too busy, or sick. Finally, there are people who buy the residue left after filtering and sell it to animal breeders in the rural areas.

Wholesale as well as retail

Three important facets of *buzaa* brewing make it a difficult product to prepare. First, the fermentation period is difficult to estimate precisely; so that when a woman fries flour on Thursday in the hope of having her *buzaa* ready for sale on Saturday, she may find that the *unga* is not ready. Secondly, after a lapse of time varying from 24 to 48 hours (depending on the weather), the *buzaa* becomes undrinkable. If the brewer doesn't succeed in selling it, she has to throw it away and lose money.

Thirdly, brewing *buzaa* is an illegal activity and the women are constantly harassed by police raids. A woman can lose one lot of beer (representing an investment of about 35 shillings) or precious brewing material in the course of a raid. If she is really unlucky, she can be caught herself, in which case she will pay a bribe of 20 shillings to be freed, or a fine varying from 50 to 150 shillings if she is brought before a judge.

When do the brewers make use of their personal networks? These networks already play an important role at the time of the gross and retail sale of the beer. Although certain women may never have brewed *buzaa* (they only buy it wholesale by the *debe**), most of the women are, successively or simultaneously, wholesalers and retailers. The women who only resell are relatively few because the profits they obtain by buying *buzaa* wholesale to resell it to the customers are fairly low. A woman can only make 4 shillings profit per *debe* in this case.

The majority of them prefer to brew their own *buzaa*. But none of them can be certain of having the *buzaa* ready at the right moment. This is why they often buy a *debe* wholesale to resell it on the days when they have brewed nothing themselves. The women say this is necessary to avoid disappointing regular customers. On the other hand, the women who brew a barrel can rarely hope to sell in one day the three and a half *debes* that it contains when the beer is made. Sometimes, the good brewers (those who have lots of clients and a good reputation) can manage it for the first Saturday of the month (all Kenyan workers are paid monthly). But, usually, a woman sells one or two *debes* of her barrel wholesale and the rest retail.

Renting and sharing

A police raid can interrupt a woman's brewing cycle for a week. If an *askar* "upsets" a woman's container, which was ready for filtering, and/or destroys her fermenting flour, she is then obliged to buy wholesale for nearly a week until her new *buzaa* is ready. But it is not always easy to buy wholesale. You have to begin early in the morning. With an empty *debe* in her hand, the brewer begins by going around to all her friends from one end of the neighbourhood to the other to see if unyone has any *buzaa* for sale. If it's a bad time of the month, this could take her several hours. Often she must enquire from her friends to see if they know anyone who has any *buzaa* available. If she doesn't find anyone, she asks a friend who knows a wholesaler to come with her. Payment for the *debe* is made after the *buzaa* has been sold retail, so credit must be obtained before the woman can take away the *debe*. Sometimes the mutual friend stands surety in case of default of payment.

Not only do the women use their friends to buy and sell *buzaa* wholesale, but they help each other in various ways in making it. The most common form of cooperation is the rental and sharing of equipment and premises. Many women lack brewing utensils, either because the police have destroyed their equipment or because they haven't been able to get the capital to buy it. In this case, a woman will go and borrow what she needs or hire it at a modest price from a friend or neighbour.

Friends often help each other in case of illness or difficulties. If a woman is sick and too weak to fry her flour, a friend can do it for her. If a brewer has to go out on business or on an unexpected journey, a friend sells her beer for her in her absence. Obviously, the friend would be someone who had nothing to sell herself that day. The woman who helps her in this can claim a *mukevi* (a pot) of beer by way of payment.

ON THE OUTSKIRTS OF NAIROBI
a growing number of single women

Those who share the same room often take it in turns to brew; simultaneous brewing creates enormous problems. The women sell in their own homes; the clients could well be strangers, but on the hand they could be known to some of the other women. This leads to disputes as to who should serve whom, which almost always cause a loss of *buzaa*. So brewing in turns is the most equitable solution.

Roommates usually help each other sell their *buzaa* when it is ready. This enables each woman to do her household chores and makes her task lighter. Unfortunately, the women who live together often quarrel and become jealous of one another, particularly if one of them clearly has more success than the others. The sale of *buzaa* is the most common cause of quarrels between roommates, apart from quarrels over a man.

The only security

Sometimes the women pool their resources to rent a "shop" (a room used to keep brewing materials and *buzaa*). These are friends who live fairly closely to one another. The women who rent together tend to cooperate in numerous fields; brewing, cooking, looking after the children, plaiting hair and sharing utensils and food. An extremely important form of collaboration among neighbours is the help they give one another during the police raids and in case of arrest. When a woman is arrested, her neighbours lock her house to prevent burglary. Afterwards, they alert her nearest relative in Mathare or, if she has no relative living near, her closest friend. The latter, with the help of other friends and neighbours, raises the amount necessary for bail and the arrested woman is usually freed the same day. In Mathare, friendship is the only security. Every woman in Mathare — for that matter, all the members of any society — belongs to this network of friends, acquaintances and relatives with whom she deals in various circumstances. This network extends over several districts of Nairobi and several rural areas. We will limit ourselves here to that part of the network concerned with brewing, otherwise known as "the instrumental *buzaa* brewing network."

How is this network constituted? The first part of the network corresponds more or less with the area of residence. Mutual trust among the inhabitants of each district is essential for two reasons: *buzaa* brewing is illegal, and the product goes off quickly. It is more practical to borrow material from close neighbours than from friends farther away, because anyone carrying brewing materials can be arrested on the road and fined. Brewing in turns as mentioned above means that all the occupants of one room or group of houses can maximize their profits.

In both cases, proximity is a necessary condition for collaboration.

In this part of the network the bonds often depend exclusively on brewing activities. Proximity is neither the result nor the cause of friendship. People who share a room don't know each other: they do it to save on the rent. It is perhaps interesting to note that in fact a group of houses shelters people who have come there by chance and are changing all the time. The owners rent lodgings to the first comer and, in many cases, take no account of race, area of origin, age or sex.

This aspect is therefore defined in terms of belonging to a group of fairly unstable neighbours. The bonds between these people depend mainly on activities linked with *buzaa* brewing and recreational activities like gossiping, working out-of-doors and plaiting hair. The contacts are daily, but unstable and superficial. It has often been noted that intense relationships depend not on proximity but on other factors.

This brings us to a discussion of the second link in the *buzaa* brewing network — the more extended part. This includes the bonds linking a brewer to the other women living in different districts of Mathare with whom she has to deal in connection with certain activities related to brewing. It is to them that she has recourse to obtain the three most important forms of aid, which presuppose a relationship of trust: extensive aid in time of serious crisis; wholesale purchase and sale of *buzaa*; and collection of bail money and payments of fines to the police.

Violating the strict code

These networks of collaboration and solidarity enable the women to survive in essentially hostile surroundings.[2] The women are unemployable, except at extremely low salaries; in the eyes of the municipal council, their community is in a doubtful position; and they are exposed to daily police raids. The analysis made in the preceding pages shows that the success of people carrying on a certain economic activity in the unofficial sector depends more on social factors than on economic factors.[3] Collaboration and solidarity between brewers is reflected in the uniform quality of *buzaa* and in the standard price for a half-litre pot. Money could be saved by cutting down on the quantity of yeast added and diluting the beer when it is ready, but this rarely happens; when it does, the other brewers complain bitterly. Not a single woman would attempt to attract clients by lowering the price of a *mukevi*. This would violate the strict code of solidarity and any woman who tried to do it would be severely sanctioned.

Being self-employed in the irregular *buzaa*-brewing sector is thus a simple and practical means of subsistence. It requires very little capital outlay and practically no qualifications or training. Moreover, it allows a woman who has several children to be at home all the time. Although it must be added that combining commercial and domestic activities in one little room is not an easy task. ◆

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* *Tin container with a capacity of 19 litres.*

1 *M. Gachuhi*, Anatomy of Prostitution in Kenya. IDS, 1973.

2 *P. Snyder*, Cooperation and Solidarity as Survival Necessities in a Black Urban Community. *Urban Anthropology, Vol. 2, 1, 1973.*

3 Employment Incomes and Equality. OIT, *1973.*

Engulfed in myths

by Graciela Torricelli D.

According to many sociologists, until the twentieth century the high rate of infant mortality on the one hand and the absence of birth control on the other, together with a relatively short life expectation, obliged woman to dedicate the greater part of her life to procreating and educating her offspring. Not surprisingly, fathers concluded that the education of a son was a better investment than that of a daughter.

This premise came under attack for the first time with the transformation of the family structure. Afterwards, various statistics indicated the importance of university education for women.

However, in countries with high living standards, the increased number of women in universities is a recent phenomenon. Its history hardly goes back as far as the beginning of this century and, as a massive movement, it is only two or three decades old. The percentage of women students varies enormously, but it is not less than 13 in any Latin American country.

Undoubtedly woman is beginning to take her place in life, both in education and in work. And the transformation of the whole social structure — at present discriminatory — will come about as the new image of woman emerges.

The Latin American woman's dramatic struggle to take her place in the cultural, economic and social life of her country coincides with the developing countries' need for qualified personnel. It seems that the absurd wastage of human potential is only remedied when a country embarks upon a rapid process of change. Thus, in Cuba in 1972, women represented 59 percent of the labour force in education, 60 percent in public health and 40 percent in light industry. At present, they constitute 25.3 percent of the working population. First-year registrations for various university courses in 1972 numbered 12151 boys and 8970 girls.

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Our continent has produced many outstanding women in the fields of education, arts, science, politics and the struggle for the freedom of the human race. Female voices speak for these countries to other countries and continents. By their presence alone, these women highlight the injustice of the discrimination that has been crushing their sex since time immemorial. Women suffer discrimination everywhere, but it weighs most heavily on them in the Third World.

False liberty

The illiterate Indian woman of the High Andean plateaux, of the Guatemalan, Ecuadorian and Paraguayan tribes exists in the same torpor and atrocious injustice as most of the women of Africa and Asia. Both are centuries behind the woman, sometimes a compatriot, who is brilliantly expounding her country's problems before an international assembly. There is a considerable number of outstanding Latin American women, but they have had the privilege of education and they constitute an exception if we think of the hundreds of millions of women in Latin America who live in complete ignorance.

The Latin American woman — at different levels of consciousness, dependence and development — is lost in the jungle of myths surrounding her. The myths date from long ago and she breathes them in at birth; for this reason, they have the force of indisputable truths. The development of her personality is based on this false infrastructure. Some women discover in time the unfairness of the invisible line that separates the few fields open to them from the wide opportunities available to men; but many content themselves with a liberty as false as the myths on which they were nurtured in infancy.

Probably the woman who pays least attention to the traditional Spanish cult of virility, of absolute *machismo* (maleness) is the woman living in the South Cone.* especially the Chilean.

The Latin American woman has come a long way since the day, at the end of the last century, when the young Ernestina Pérez, with unheard-of daring, took the decision to enrol at the School of Medicine of the University of Chile. This action, which today appears so simple, at that time meant jumping a wide barrier of prejudices and defying a whole society. Ernestina Pérez was disowned not only by her friends, relatives and neighbours, but also by her fellow students and the majority of her professors. Pointed out as something grotesque and frightening, branded as "lunatic," "abnormal" and worse, she passed her examinations brilliantly each year. At that time, women were not supposed to work outside their own homes except — as a big concession — as teachers, mainly at primary level.

With her austere personality, her lucid intelligence, her enormous capacity for work and her perseverance, the young girl eventually gained the respect of her professors and colleagues. Graduating with honours, she made it easier for all the other women who were struggling to follow in her footsteps. She stimulated the waverers and the timid, and made a considerable impact on those who had previously depreciated and disregarded woman's intellectual potential. After her triumph, other young girls began to study medicine, helping to open this profession to women. But this too is relative: even today, surgery, for example, has not really been taken up by women, and if there are any female doctors in Latin America who practise it, it would be anonymously and only for minor operations. It has been easier for women to distinguish themselves in obstetrics, gynecology and psychiatry. Research also offers scope for women.

Ernestina Pérez, pioneer of Latin American feminists, was the first woman doctor in Chile and in Latin America. Married to an ultramodern writer, at one stage in her life she found herself obliged to choose between her marriage and her profession. She chose the latter. It had to be so. She had defied everybody to obtain the title of doctor, she could not renounce her career for the love of a man just as *machisto* and uncomprehending as those who had made her life a misery in her first years as a student.

Latin American women have advanced considerably since then, at least as far as education is concerned.

Recent statistics show that the number of educated women in the whole of Latin America rose from 14 400 000 in 1960 to 26 600 000 in 1970. If we look at the changing picture of female registration at various levels of education, in the same decade, we can see that the participation of women settled at 48 percent between 1960 and 1970, with significant variations from one country to another and from one level of education to another. In primary education, female registration in 1970 represented 49 percent. In secondary education, the percentage at the same date was also 49. In technical education, the percentage of female registration dropped to 44. In teachers' training colleges, it rose to 82 percent and in university education dropped to 34 percent. The percentage of women registered at university level varies according to the subjects. The highest percentages are in the humanistic branches, social sciences, law and medicine, where about 90 percent of female registration in higher education is concentrated. Women predominate in the faculties of letters and pedagogy.

the Latin American woman is forced to develop her personality within an irrational context

In constant tension

The separation between male and female professions appears to reflect a social situation rather than a biological fact. The link between social conditions and the reality of feminine education is evident in Cuba, for example, where sexual equality results in a more or less even distribution of female students among the various

faculties. In other Latin American countries, family and social prejudices are beginning to dissolve, and university students are abandoning the traditional sectors.

The employment of women at all levels is also increasing day by day. It would appear, therefore, that Latin American women are, step by step, achieving a position of real equality with men. However, it is not so. This idea is far from reality. What is certain is that woman has gained the right to study and to work as well as filling all those jobs that are supposed to be specifically hers: care of the house, the husband and the children. Man has "magnanimously" accepted the fact of woman's contribution to the family budget, with the tacit condition that the home must be perfect in every way without his lifting his little finger. Thus, woman lives in constant tension. She redoubles her efforts in her work both outside and in the house, so that her husband will forgive the fact that she — like him — participates in the economic life of her country and is engaged in a productive activity. Or else she studies to develop her intellectual and human potential and later play her part in the cultural or socioeconomic life of her country.

This situation of concealed injustice is very evident in the case of the Chilean woman who — not having had her image analyzed — gives the impression of being the most liberated of Latin American women when in reality she is the most oppressed. I remember an Uruguayan woman remarking that Chilean women always seem to be sitting on the edge of their chairs, ready to stand up, attentive, and never relaxing for an instant. Their homes are always impeccable, they are themselves impeccable, their children well cared for. In addition, they work or study. They are so efficient, so superior, that their husbands — to revenge themselves for this perfection — deprive them of sex and affection and often end up by going off with someone else. Chilean women never allow themselves to slacken their defences, to put on weight, to walk around the house in dressing gown and slippers, like the Uruguayans.

Latin American women are beginning to pay the price of the apparent generosity of men who are for women's lib, and allow them to work or study, while at the same time subtly pressuring them to continue doing "women's tasks." The woman who has realized the unfairness of her situation, has struggled for her total development, has reached the higher levels of education or fills an important post in any field, will inevitably come up against two insurmountable obstacles: first, man — who has neither evolved nor become aware of the new woman before his eyes; secondly, the existing structure of her country — the laws of every country in Latin America discriminate against women. In marriage, in work, in study, woman will come up against these stratified laws, made by man for the benefit of man. For this reason, there are limits to her advancement unless she is very highly qualified. With regard to matrimonial laws, absolutely all of them tend to subjugate and annihilate woman as a thinking being with the right to make decisions.

We have to start from the fact that Latin American woman is discriminated against in all social classes. If we consider the most dispossessed social classes, we shall see that the discrimination reaches subhuman levels.

Paternalistic activities

The lowest level of the social scale in our continent is occupied by the natives. The native woman works in the fields, tends the flocks and trades. She is also a craftswoman: she weaves, embroiders, sews, spins, dyes, makes pottery and baskets. She also cooks, washes and looks after her children and her husband. Humble and unselfish, she is totally subject to the man's authority. Despite the quantity of productive work she can get through, she always occupies a place of inferiority in relation to the

Indian man. For example, she doesn't even walk beside him. She is always several paces behind, carrying the heaviest share of the burden. The high percentage of illiteracy among Latin American natives becomes almost 100 percent in the case of Indian women. The man controls the home and is absolute master of the wife and children. She accepts this situation with complete passivity. Possibly the Indian, discriminated against and disregarded by his compatriots, tries to boost his ego by exercising his authority over a person even more oppressed than himself: his wife.

The lower-class woman in rural zones finds herself in a situation very similar to that of the Indian woman, even though she goes in for trade on a bigger scale. In the city, her main job opportunities are in domestic or general service. Quite a few women work in factories, especially in textiles.

AFTER AN EARTHQUAKE IN NICARAGUA
their lives are precarious even without natural disasters

Although the working class woman enjoys a little more freedom than the native woman, she feels more keenly the instability and precariousness of her life. Her world is uncertain, while the Indian, despite the narrowness and poverty of her life, enjoys more secure surroundings. In her relations with men, she is also in a position of inferiority, altough to a lesser degree than the Indian. The woman of this class attends primary school only until her physical development enables her to start working.

The upper-class woman has similar characteristics throughout Latin America. She builds up an intense social life and travels continuously. She lives with her gaze fixed on Europe and the United States, "where everything that is really important or worthwhile happens." She has no interest in — or despises — her country's culture and folklore. Her contacts with the lower classes, which inspire her with an obscure dread, are reduced to the use of their services or the superficial contacts resulting from her charitable works. Very Catholic, she is however hard and egoistical. She is convinced of the justice of economic and social inequalities, and believes that her privileged situation results from her obvious superiority. All her sociocharitable activities are paternalistic, and she carries them out efficiently.

With logical exceptions, there aren't any creators or intellectuals or scientists in this class. Only consumers. They are clever buyers and they move in the consumer society like fish in water. As she has demonstrated on different occasions, the upper-class woman is capable of organization and of using all the means at her disposal to oppose anything that threatens her class privileges or her property.

This woman — although, like Latin American women in other social classes she is discriminated against — feels herself protected by her economic and social position and makes the best of her situation in relation to man. She has only developed formally, and is in fact narrowly conservative. She is scared of any sort of change. She regards with suspicion women who struggle for their rights. For her the best that can happen is that nothing should change, that everything should continue as it is.

The "fear of fear"

So let us come back to the point from which we started: the middle-class woman. She is the well-educated woman who wants to work, to progress like a human being, and struggles to reach her own level in society, like a man. But there is also a sector of middle-class women entranced by the siren song of the consumer society. They are always thinking about the upper classes and longing to travel in Europe, the dream of the Latin American small bourgeoisie. The middle-class woman is an arriviste and a social climber, and she shares the fears of the upper classes. This "fear of fear" prevents her from joining the fight for woman's equality and the abolition of unjust laws. Altough her life is far from easy, she prefers it to the unknown. She usually ends up by aligning herself with the upper middle-class woman and opposing any foreseeable change.

Notwithstanding this misguided sector, the destiny of Latin American women rests with the middle-class woman. Because she is cultured and is not obliged to live up to either wealth or ancient lineage, she is the one who must carry out the all-important task of helping the less fortunate Latin American woman to become aware of her situation. Together, they will bring about the necessary structural changes in society, which will facilitate their final development as integrated human beings. ◆

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* *The region of South America comprising Chile, Argentina and Uruguay.*

The invisible woman

in a money economy, women working as unpaid labourers are on the lowest rung of the socioeconomic ladder

by Clio Presvelou

The growing gap between population growth and the production of food has suddenly put the role played by women as producers of food in the limelight of the world's conscience. But who are these women who emerge as agricultural workers and food producers? What role do they really play in agriculture not only in terms of handling hoes and plows, of planting and harvesting but also in those of social status acquired through their work and participation in decisions about what and where to plant and sell and to what end?

These are not the women in industrialized countries but those of the Third World living in countries where more than 80 percent of their subsistence is derived from agriculture. A broad survey of developing countries reveals the astonishing variety of the condition of women as related to agricultural production.

In an earlier study we established four major profiles built around the concept of social visibility.[1]

The concept of social visibility draws attention to and assesses the degree of women's effective participation in productive agricultural tasks and helps to determine the social recognition arising from such participation. In other words, the mere fact that women work in the fields, thus producing goods for family consumption, is not a sufficient indicator of their effective social visibility. Social recognition by society is also required. The usefulness of this concept lies in the fact that it enables one to evaluate the effective involvement of women in production tasks both from the viewpoints of efficiency of their efforts and of their self-actualization.

These profiles make it possible to determine the place of rural women in their respective societies as related to agricultural production, and to childbearing and caring processes, two universal components of every woman's role.

The first group is made up of women whose participation in agricultural production and family tasks is very low. The female proletariat (the lower socioeconomic strata in all rural areas) presents this profile. Economic underemployment, complete lack of education, poor hygienic conditions, undernourishment, illness and superstition contribute to the low productivity and social visibility of women. In some societies, however, the entire female population, and not merely the women belonging to the lowest socioeconomic layers, presents this profile. To be underfed, ill, uneducated and pregnant from the first day of menstruation until menopause is the usual lot of women in the Arab world and in certain rural areas of Southeast Asia. (Men, much like women, of course, lead a subhuman life, entirely dominated by the hardships of the physical environment.)

Olvidadas and fish mammies

Tens, perhaps hundreds of millions of women around the world are left to poverty and illiteracy, forced to house confinement and malnutrition, yet are surrounded by vast expanses of unused or badly used land. Forsaken, these women cannot help perpetuating a corrosive social pattern of idleness and inefficiency; they are the *olvidadas*, the forgotten human resource in rural development where they are forbidden to play any role at all.

The second group is made up of women who combine low intrafamilial visibility with a high (or medium) extrafamilial one. In this group, we find women who, in relative terms and within a given culture, deploy considerable agricultural activity but possess limited time and skill to perform their family tasks. This pattern is found in rural areas where women (with hardly any help from men) ensure food production.

In African countries to the south of the Sahara where shifting cultivation

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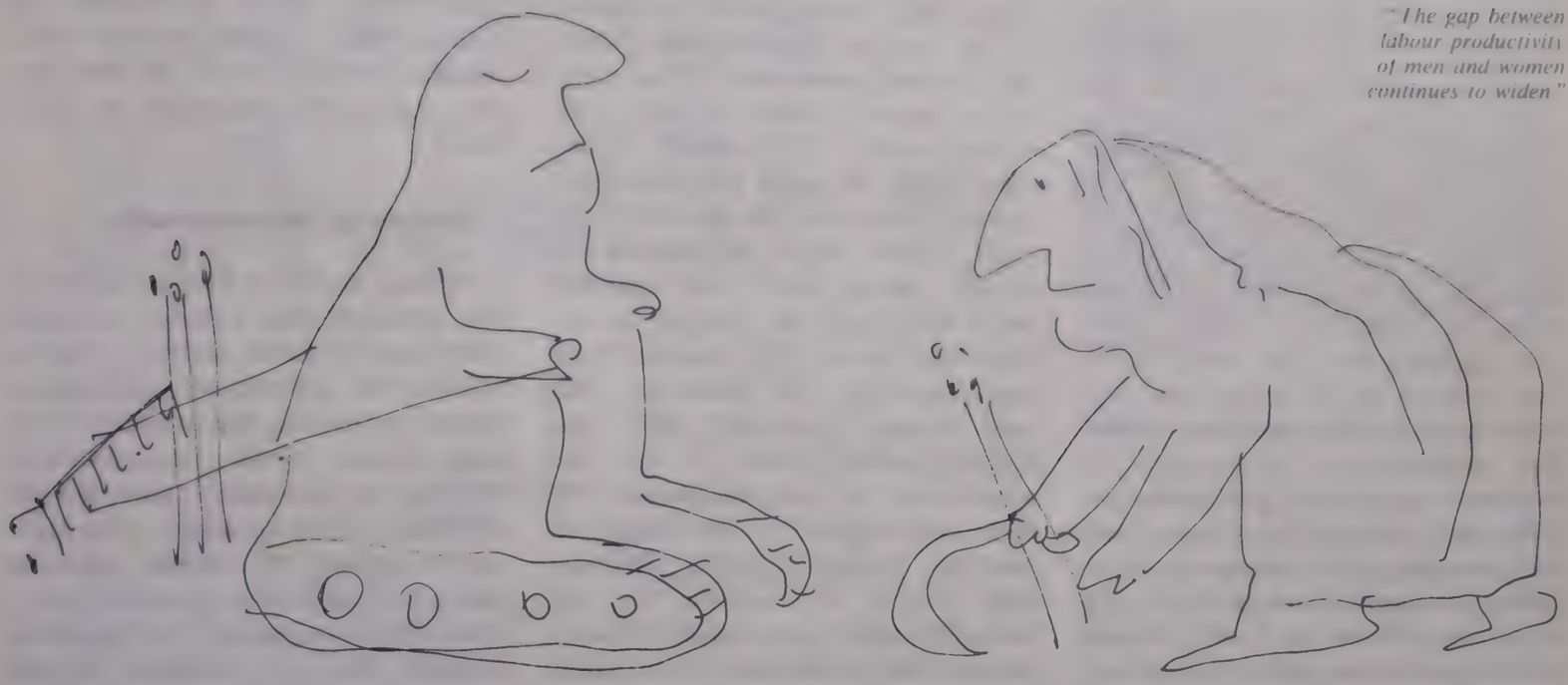


"The gap between labour productivity of men and women continues to widen"

predominates, most of the agricultural work is done by women. They plant, harvest and perform post-crop operations such as processing and marketing. Yet, in areas where cash-crop production predominates, they work as unskilled labourers during peak seasons.

A third group is characterized by high visibility within the family but a very secondary (if any) role in agriculture and community affairs. In many rural areas of Latin America and North Africa (Tunisia), the social visibility of women corresponds to this profile. In the former case, it results from the combined effects of Hispanic conquest and Catholic dogma whereas in the latter it comes from the combination of the patriarchal family system and the Koranic moral code. In such societies, economically productive work tends to be blocked. Jobs that have become "female" have a social stigma attached to them and men will not perform them. Inversely, women will be barred from productive jobs of higher status and prestige. They are massively employed in unskilled rural tasks (on coffee plantations, for example), but are expected to abandon their economic role as soon as the family income increases. Hence, the mother role is consistently highly valued, both by the culture and by women themselves who consider it as their specific calling, better suited to them than the low-prestige economic role.

The fourth group consists of women who have acquired high social visibility both inside and outside the home. Women in the rural areas of developing countries do not seem to fall into this group in any great numbers. There are, however, a few notable exceptions. These would include women who are engaged in trade for themselves, an activity encouraged by tradition. Half of the Yoruba women in Nigeria are involved in trade, while 80 percent of village and urban trade in Ghana is handled by women. The power and influence of "fish mammies" in Ghana is a well-known fact.[2] It is, however, difficult to assimilate them to rural women, even though they may originally have come from villages, because their occupation takes place mainly within the city and they look upon the latter as the locus for the growth of their lucrative activity.

The variety of women's social visibility illustrates the difficulty of treating rural women in the developing countries as an entity. Yet, it shows that only a small minority has reached a satisfactory social status by the recognition of this role as producers in agriculture. The remaining majority (300 million and more rural women in the Third World) occupies a marginal position in agricultural production and is treated as such.

Our hypothesis, then, is that whatever amount of work women put into agriculture and whatever their abilities as food producers, their contribution is consistently rated as inferior because it is devoid of market value.

The products that come from women's labour in the fields are not intended to be exchanged in the marketplace; thus they are not exchange-value commodities. They are made to be consumed, on the very farms where they were produced, by the members of their families; these are use-value products.

Devoid of exchange value

As producers of home-consumed foods, rural women as a group make up the unpaid labourers of a huge amount of socially needed production. Yet, as their activity is related to a subsistence economy and not to a money economy (profile two), it is not evaluated in monetary terms. It is, therefore, valueless and those who perform it cannot be expected to be ranked high on the socioeconomic ladder. Likewise, in societies ›

where women are forbidden or kept away from agricultural activities (profiles one and three), they are also rated low on the economic and social scales for the same reason. Household chores and child care are not exchange-value activities. Men, on the contrary, either produce commodities for the marketplace or receive wages in exchange for their work. Consequently, they are rated higher than women on the social and economic scales. It follows from this that the noneconomic relationship of women to agricultural production explains their inferior social status; and the increasing world awareness of the role of women as food producers will mask inequalities and will merely serve to maintain them in a subservient position by further strengthening their identification with goods considered to be devoid of exchange value, unless due attention is given to them as technicians and producers of commodities for a money economy.

The effect of colonization

Ethnographic literature shows that African women have always played a very important role in subsistence economies. Women were (and still are) responsible for food production through the use of rudimentary tools, mainly the hoe. They seem to have had a monopoly in the agricultural skills needed to produce foodstuffs to be used in the home.

It can, therefore, safely be said that in the area of food production, women had a greater visibility than men whose activities were usually performed away from the village (as in the case of hunting, fishing) or at certain periods of the year.

Contacts between European and non-European civilizations have, at two different periods, broken the relative balance between men and women as far as agricultural production is concerned. These historical moments were colonization and the introduction of innovations in the name of rural development.

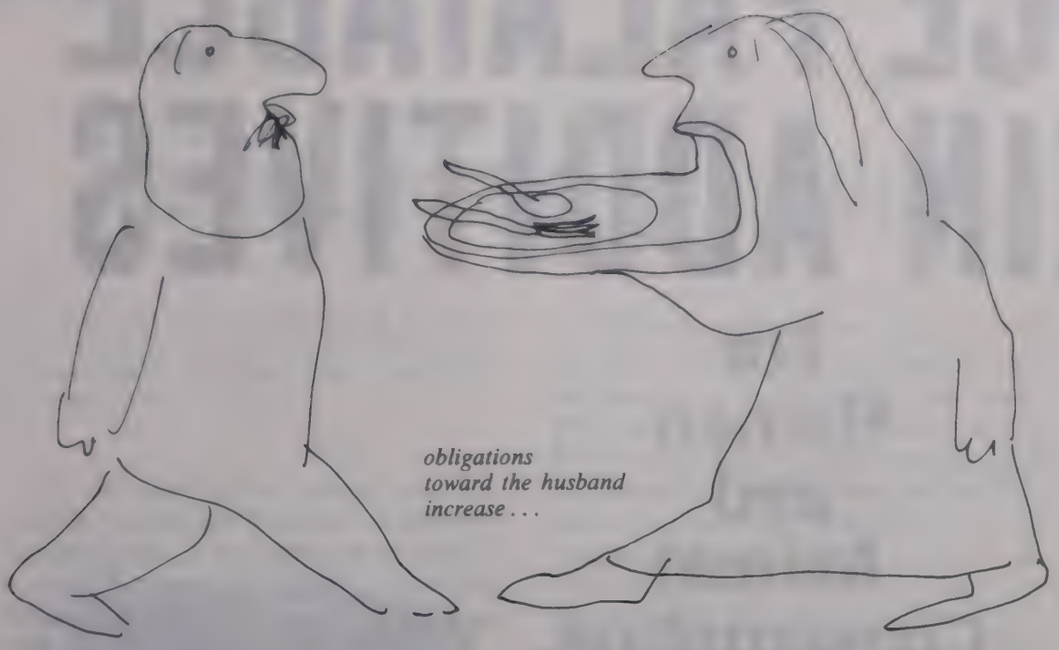
Balandier has rightly observed that social scientists and anthropologists " neglected to relate their observations to the colonial situation and lacked any dialectal awareness of the interaction between colonized and colonizing society."[3] Colonial policy precipitated the rapid entry and integration of men into the new economic order. Men were encouraged to acquire certain skills and received better tools (such as ploughs) to cultivate their lands. This oriented them toward markets. The sector in which most women possessed skills and decision-making power — i.e., the whole area of food production for home consumption — was neglected and thus became stagnant. Women were forced to continue to use backward farm tools, which became less and less productive. Their status has deteriorated constantly because of the introduction of a money economy by the colonial powers.

Monica Hunter, in her study of the Ama Pondo of South Africa,[4] notes that colonization brought about a change in the division of labour between the two sexes. The decrease in warfare and hunting reduced the amount of men's work. Subsequently, they were moved to labour centres where they worked for a market economy or plowed their fields with oxen. Women, on the other hand, continued to use rudimentary tools to produce food for home consumption. Likewise, Rodney, in discussing what he terms " the negative character of the social, political and economic " consequences of colonialism, has linked the deterioration of the bargaining power of African women to the male-oriented economic market policy of the colonial powers. According to him, the division of labour on the farm was destroyed by the fact that men were required to work for wages elsewhere than on their own fields. Women who were left behind were thus forced to take on all the heavy work (such as clearing bush, previously done by men) to produce food with unimproved technology and to fend for themselves and the children. As the relationship of men to production was changed by the introduction of wages, their work acquired social value. The agricultural labour performed by women, since it didn't produce cash, became inferior to that of men and was considered backward or traditional.[5]

Increasing the marginality

Boserup makes a similar diagnosis. She contends that colonial administrators and planners preferred men to women in commercial agriculture, thereby promoting the productivity of male labour while simultaneously limiting the productive participation of women in the economy. She sums up the results of colonial agrarian policies in the following terms: " As a result of the attitudes of the extension services, the gap between labour productivity of men and women continues to widen. Men are taught to apply modern methods in cultivation of a given crop, while women continue to use the traditional methods in the cultivation of the same crop thus getting much less out of their efforts than men. The inevitable result is that women are discouraged from participating in agriculture and are glad to abandon cultivation whenever the increase in their husbands' income makes it possible." [6]

The introduction and consolidation of development policies inspired by Western customs increased the marginality of women in agricultural production. In Africa, for example, the importance of formal education for males and the introduction of separate curricula for boys and girls resulted in the former benefiting from technical training for income-producing tasks in agriculture. Schools of farming, training in modern techniques, the ownership of machinery and loan policies were all aimed at men. Women, on the other hand, were not taught to maximize their efficiency in an area of activity that was traditionally theirs. They were trained to be efficient in home management, child care and nutrition — important activities to be sure. But these were simply added to the unchanged and backward technology used for agricultural production. Or



obligations toward the husband increase . . .

else, training was not followed by an employment policy for women. Women thus found themselves accumulating, in the name of progress, two socially necessary but unpaid activities, namely child and household responsibilities and food production.

Similarly, the introduction of new kinds of crops, although it increased women's participation in the labour force, did not always increase their incomes. In modern villages, a decrease in female income was even reported. In the Bouaké region (Ivory Coast), only 10 to 35 percent of the family income is allocated to women as against 50 percent in traditional villages.[7]

New policies of land ownership have stripped women of their rights to aspire to the means of production. For example, the transition from collective to individual land ownership makes the husband the owner. Men are thus practically freed from their dependence on the clan. This movement does not, however, seem to have affected women to the same extent. Their dependence on the clan has shifted to economic reliance on the husband. And, whereas men have lost the security of the clan but have been compensated by the security of becoming landowners, women, on the contrary, have become even more dependent on their husbands.

Under these circumstances, the destruction of the clannish system of social organization and its replacement by a husband-wife coalition does not increase women's autonomy. It is more than likely that it even reduces it. As economic reliance on husbands and the obligations toward them and their own family group increase, wives do not have the opportunity to cooperate with other women of their own clan or to increase their common awareness in terms of the roles they play in agricultural production.

The passage from a subsistence to a money economy has always been accompanied by a deterioration in the role women play in agricultural production. It is to be feared that the growing deterioration of the food supply for local populations, resulting from the imbalance between food produced and the number of people to be fed, will further lower their status in agriculture because they will be increasingly forced to participate in unpaid labour.

The limited educational opportunities for rural girls and women, the high female illiteracy rate and the high number of female school dropouts (all permanent features in the rural and urban areas of developing countries) further decrease the efficiency of women's productivity.

Huge sums are spent in programmes of primary education and functional literacy classes, yet rural women are badly prepared to assume responsibilities in helping to develop their community.

The result of such drudgery is the further subjugation of women or the migration to already overcrowded capitals where, unprepared for productive jobs, they are virtually forced to become servants or prostitutes, the only income-producing activities left to them!

With adequate compensation

As much as it is necessary to adapt development programmes to the needs of women according to the stage of social visibility they have reached at any given moment, it is even more mandatory to prepare them to assume the role of competent agrotechnicians and promote full-time or part-time nonagricultural employment in industries set up in rural areas and to recognize the economic value of the commodities and services they produce.

For all these reasons it may safely be surmised that if commercialized agriculture is promoted without adequate compensation for women in terms of general education, training in the technical skills required in agriculture, of legislative measures that do not discriminate between men and women, women's role in agriculture will tend to become less and less income-producing. It will prevent an improvement in their social visibility, required if any significant, worthwhile progress is to be made. ◆

[1] *C. Presvelou,* Participation of Women in Rural Development. FAO, *WS/E 5494, 1973.*
[2] Report to the Government of Ghana: Fish Marketing in Ghana. FAO, *Report No. 1300, 1961.*
[3] *G. Balandier,* Sociology of Black Africa. *Praeger Publishers, New York, 1970.*
[4] *M. Hunter,* The Effects of Contact with Europeans on Pondo Women. *Africa: VI: 259-76, 1933.*
[5] *Rodney,* How Europe Underdeveloped Africa. *Bogle L'Ouverture/Tanzania Publishing House, 1972.*
[6] *E. Boserup,* Women's Role in Economic Development. *George Allen & Unwin, London, 1970.*
[7] *M.P. De Thé,* Participation féminine au développement rural dans la région de Bouaké. *Centre Africain des sciences humaines appliquées. République de Côte d'Ivoire, Ministère du Plan, 1968.*

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Raising some questions

Sociology and Development, edited by E. de Kadt and G. Williams. Tavistock Publications, London; Barnes & Noble, New York, 1974, (374 p.), £5.60.

An introduction that raises some important theoretical questions concerning the sociology of development prefaces a selection of papers delivered to the British Sociological Association's Conference on Development.

Actually there is no adequate alternative to the concepts elaborated by functionalism in the field of sociology of development. The essays in this volume contribute in an empirical way to the study of phenomena that would have been disregarded or minimized by the functional analysis. Therefore, this study must be considered as a step toward the elaboration of a sociological theory of development and underdevelopment, which can only be reached through empirical research.

Functionalism leaves some fundamental gaps in the analysis of underdevelopment. It neglects the importance of the international system of economic and social relations, and its consequences for the poor countries, and underestimates or ignores the analysis of social classes in those countries. This theoretical position has induced several students to elaborate a sterile and schematic comparison between tradition and modernization intended as a progressive assertion of modern values, which coincide with those of the dominant classes of the capitalist world. In the early 1960s, Bendix, examining the Japanese development, demonstrated that traditional values did not obstruct modernization. But the work of Gunder Frank, a more resolute critic, has demonstrated that the elements considered traditional in developing countries are essentially modern and the result of colonial domination reflecting the capitalist metropolis.

Thus, the theory of dependence, taking these relationships into account, was evolved. The concept of dependence is more than the simple statement that the economy of a developing country is connected to the international market or to aid from industrialized countries. Dependence has a widespread character, which tends to involve every sphere of the social organization. These considerations are emphasized in the essays on medicine and mass media, which demonstrate that transplantation of Western practices in developing countries might have a disastrous effect on their development.

Furthermore, as pointed out by Cardoso and Faletto, the structure of dependence implies a form of social and political domination, and thus the analysis must be directed to the character of the institutions and the relationships between social groups. If dependence comes from the international system, it is also seen in several inner relationships within the developing country, which reach their own autonomy.

The role of the bourgeoisie

From this point of view, both the problem of political elites operating in developing areas and the function of the institutions assume an important role. Several recent examples demonstrate that investments in developing areas are ineffective either because they are administered by a political class bound to patronage or dissipated owing to inefficient institutions and to the corruption of bureaucracy. This argument is also important for an analysis of the functions of the so-called national bourgeoisie. Indeed, one of the most important points of the neo-Marxist analysis, as emphasized in one of the essays, is the observation that the bourgeoisie of developing countries does not play the progressist role typical of the industrial countries.

The analysis of social classes and their relationships in a developing country shows some crucial aspects. On one side, there is the problem — connected to the definition of exploitation and surplus — of arriving at an objective definition of the classes. On the other, there is the question of identifying the most important contradictions in developing countries.

BOOKS RECEIVED

H. Chenery, Montek S. Ahluwalia, G.L. Bell, J.A. Duloy and R. Jolly.

Redistribution with Growth

Published for the World Bank and the Institute of Development Studies, University Press, 1974, XX 306 p., £1.40.

Describes the existing distribution of income in developing countries and proposes a reorientation of policies for improvement. The authors maintain that the distributional objectives should be treated as an integral part of development and growth strategy.

Chenery is Vice-President, Development Policy, at the World Bank. Ahluwalia is Division Chief in the World Bank's Development Research Centre. Bell is a Fellow of the Institute of Development Studies. Duloy is Director of the World Bank's Development Research Centre. Jolly is Director of the Institute of Development Studies, University of Sussex.

Gisele Podbielski

Italy: Development and Crisis in the Postwar Economy

Oxford University Press, U.K., 214 p., £1.50.

This is a concise general review of Italian economic development since 1945. The problems confronting Italian policy makers are explained in terms of structural imbalances: coexistence of modern enterprises and backward enterprises; growth of private consumption and inadequate level of collective consumption; excessive urbanization and abandonment of rural regions; development of gap between the centre north and the south.

Podbielski has been Economic Affairs Officer at the UN Commission for Europe, working on the *Economic Survey of Europe*.

Alfredo Hernández Urbina

Compendio de Sociologia Peruana

Ediciones RAIZ, Trujillo, Perú, 1972, 242 p., Soles 120.

The author dedicates the first part of the volume to the development and different concepts of sociology. The second part studies problems of social stratification, agrarian reform, and other conditions and influences, such as political parties, in Peruvian society.

Alfredo Hernández Urbina is professor at the Escuela Superior Técnica de Administración in Lima.

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The theoretical basis for the analysis of the social classes is given by the concept of exploitation, which depends on the concept of surplus. But, there is no generally accepted definition of the surplus concept. With good reason, the introduction points out that a sociological analysis doesn't need a definition of the concept of surplus based on quantifiable terms. It should be enough to prove that the social conscience is aware of the following: some groups of workers are exploited in the sense that they are deprived of part of the surplus. Exploitation exists when the ruling class does not offer the services resulting from their obligations in exchange for this deprivation.

Fundamental contradictions

Such assertions are based on the idea that the popular concept of social justice is rational and objective. Even if well founded, this can be criticized. If, in fact, the objective existence of exploitation is based on an analysis of the social conscience, a subjective criterion will be introduced. An assertion of this type implies that situations of "false conscience" will disappear with time. But, even if plausible, this must still be demonstrated.

The large majority of the underprivileged consists of farm workers and marginal urban masses in the Third World. Therefore it is obvious that attention to their problems is always increasing. Recently, Nun, for example, has advanced the hypothesis that the marginal masses represent a main contradiction in developing countries. In economical terms, marginal mass has been defined as that part of overpopulation without the function of reserve army of labour. While, during the competitive phase of capitalism, the law tending toward overpopulation was that of acting like a reserve army of labour, in the monopolistic period only part of the overpopulation performs this function. The structural impossibility of absorbing the marginal masses in stable industrial occupations, always according to Nun, would have to demonstrate the existence of an unresolved contradiction.

It is obvious that such a contradiction has an analytic character. Comparing — on the basis of this indication — the results of the research of A.M. MacEwen, concerning the differentiation among the urban poor in Latin America, published in this volume, this hypothesis doesn't seem to be confirmed. In fact, this essay points out that among the urban poor, there are some mechanisms and processes of structural integration that serve as a basis for social integration.

Thus, more than ever, the problem of the fundamental contradictions of the relationships among the social classes remains open.

As we can notice, this book raises more questions than solutions, and this should be considered an advantage. The sociology of development, giving up the narrow character of functionalism, will be ready to pursue the proposals offered here. In fact, these proposals increase the theoretical problems while stimulating empirical research.

Raimondo Catanzaro
Catania

Pioneering in Botswana

Report from Swaneng Hill: Education and Employment in an African Country, by Patrick Van Rensburg. Almqvist & Wiksell, Dag Hammarskjöld Foundation, Uppsala, 1974 (235 p.).

This book is a collection of various papers on the author's activity in Botswana (former Bechuanaland Protectorate), written at different times over a period of nearly ten years (1962-1972). It is the documented story of an experience of pioneership in an emerging African country with a per caput income of about £25 per year and only six secondary schools for a total population of 500 thousand inhabitants (in 1962). It is also an ideal strategy for an educational system that could conciliate rapid economic progress with real social justice. How to make secondary education less costly and available to a greater number of people? How to make the school the focal point of development in the community?

BOOKS RECEIVED

W. Beckerman

In Defence of Economic Growth

Jonathan Cape, London, 1974, 210 p., £3.95.

The author examines the debate about economic growth born from the MIT Report from an economist's point of view. He maintains that economic growth is vital to our society: in fact, the failure to maintain it means continued poverty, deprivation, disease, squalor, degradation and slavery for countless millions of the world's population. In this context, he examines GNP and welfare, pollution and resources for growth.

Beckerman has been professor of political economy at the University of London and Head of the Department of Political Economy, University College, since 1969.

Raan Weitz, Editor

Urbanization and the Developing Countries: Report on the Sixth Rehovot Conference

Praeger, N.Y., 1973, 320 p., US$16.50.

As Weitz says in the introduction, the book is neither the report nor the proceedings of the Conference but presents the subject matter in the form of papers or discussions as seen through the eyes of the editor. Experts evaluate urbanization trends in Asia, Africa and Latin America; the role of the metropolitan centre in national development is analysed and strategies for planning, organizing and absorbing rural populations and promoting regional growth are suggested.

Weitz is head of the Settlement Study Centre in Israel.

Tamás Szentes

The Political Economy of Underdevelopment

Akadémiai Kiado, Budapest, 1973, 332 p.

What is the historical cause and real nature of underdevelopment? What is the way out of underdevelopment? The author tries to answer these questions through a critical survey of development and growth theories, and a study of the forms of dependence and distortions of economic structure in developing countries. The prospects for the internal and international liquidation of underdevelopment are indicated in the conclusion.

Szentes is professor at the University of Budapest.

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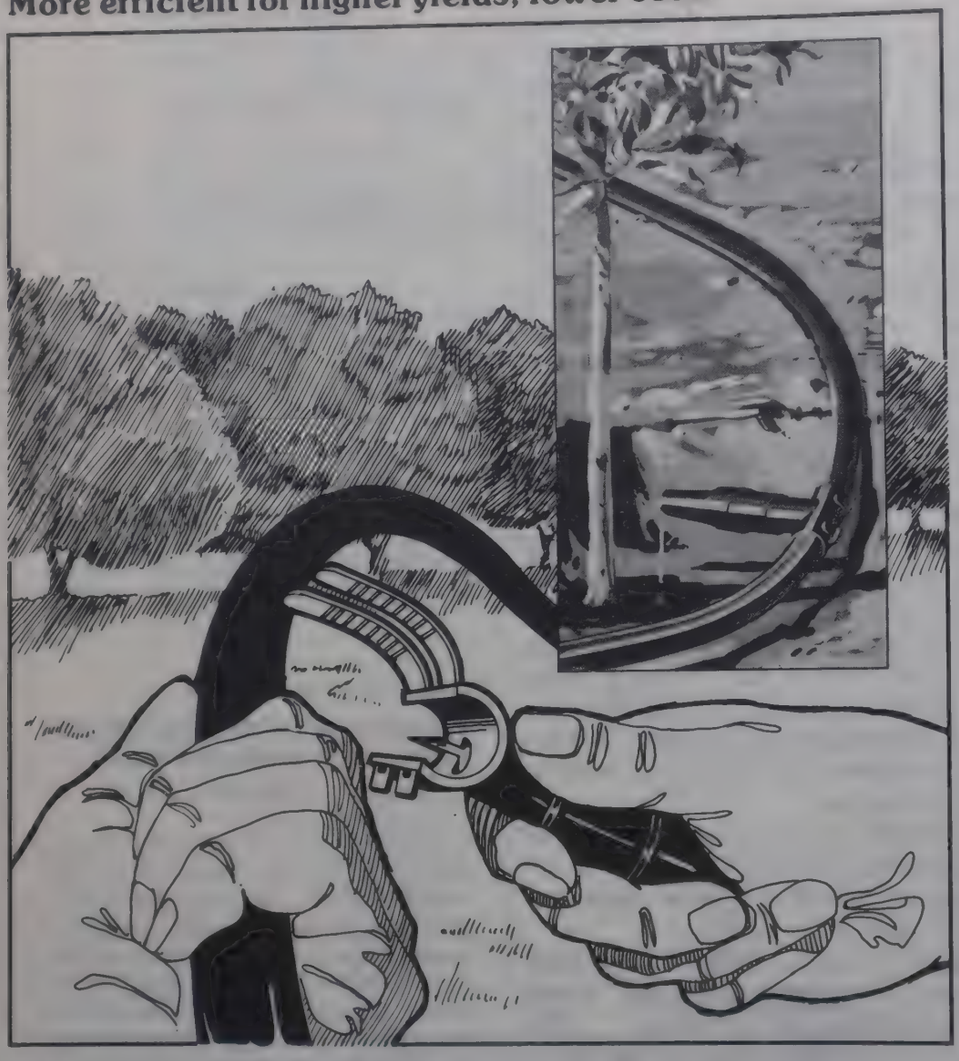

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The central idea of the book, and Van Rensburg's answer to these questions, is the connection and interaction between education and economics. The practical realization is a cost-covering school, where theory teaching is combined with practical activity. Thus, the "Builders' Brigade" was conceived, on the example of the first Brigades formed in Ghana: a tribal system of regiments, originally for military purposes, in which all young men of the same age group were called up to undertake public work also in peacetime. In the Brigade, 80 percent of the trainees' time is spent on the practical job and only 20 percent in the classroom: the building of the school was the first result of the student's voluntary work.

Since 1967, this type of training has been extended to include other activities: the Carpenters' Brigade, the Mechanical Brigade, the Farmers' Brigade, the Electricians' Brigade, the Tanners' Brigade, the Textile Workshop for girls. By the end of 1972, all Brigades were covering a substantial proportion of their costs, and some of them were covering all their costs through the sale of their products. There was a tight connection between the school's practical life, activities, and academic subjects (English, mathematics, science, language of Botswana, etc.). By providing the skills needed by a developing country, theoretical instruction was conceived to give the trainees some understanding of the economy they would enter and to prepare them to undertake production on their own, preferably in cooperatives.

An elitist trend

These aims call for a very practical outlook in the teaching of all subjects, a drastic reorganization of subject matters in the curriculum and a longer working week and fewer holidays.

The author's greatest merit is the conscious rejection of the formal education system inherited from Europe, which primarily serves, he states, to create a self-perpetuating middle class. He realizes that the most serious risk in the developing countries' educational system is the formation of an intellectual class, which would be inadequate for productive work, depending only on certificates, as it

happens in Western capitalist countries. Thus, he is consistent when he tries to create comprehensive structures that are highly correlated to the country's economic life. Moreover, the result of a self-covering training is the breaking of a great barrier and the extension of a chance to higher education for all citizens.

Nevertheless, the elitist trend present in European tradition has still some influence on this courageous pioneer: indeed he says that doctors, architects, engineers, lawyers, research workers, bankers, etc., need long and intensive academic preparation, while a practical training, with some general notions, is enough for technicians. These statements are in strange contrast to his democratic thoughts and to his ideal of education, which should "develop to the full the personality, skills and intellect of every individual as member of society..."; it should "create fully conscious men, in the recognition that men are political, economic, social and cultural beings, and it should give them the ability to control the environment but the sensitivity not to destroy it."

We believe that the experiment of Swaneng Hill would be of considerably greater paradigmatic value if the basic idea by which it is guided were extended to the entire concept of collective education and not only to the limited field of technical formation. This should cover not so much the practical aspects (such as the cost-covering), but also the connection and the contemporaneity between the productive work and the intellectual work for the active introduction of the student to the socioeconomic structure of the country.

Graziella Priula Cazzola
Roma

Farmer participation

L'animation agricole, by Roger Pasquier. Editions Universitaires, Fribourg, 1973 (144 p.), Sw F 19.

The author has written a well-documented work, which confirms his preliminary definition of agricultural development: "a form of agricultural extension service based on farmer groups at the village level — and on their development technicians."

The book is divided into three parts: the first part deals with experiments in Chad, Tanzania, Rwanda, Ivory Coast, Togo and Senegal. The social structures of farmers are also analysed.

The second part of the book is devoted to explaining what agricultural development is and the techniques on which it is founded. We have reservations about the actual possibilities of association between groups of farmers living in centres of between 15 to 20 thousand people. Our experience has shown that centres of no more than 2 600 to 3 000 families (from 8 to 10 000 persons) represent more viable bases of action because within these limits people still can get to know each other or to recognize one another. With larger groups, the problem of political leadership takes precedence over technical problems. Furthermore, in the present condition of African society, it seems easier to envisage trade facilitation, product conservation and improved communications (roads, bridges, irrigation systems, etc.) when the unit remains within the limit of 9 000 inhabitants.

The third part explains the extent of agricultural development rather clearly. Though we agree with the author that the formation of agricultural technicians in training centres is not expensive, we would point out that the mass production of agricultural development experts is difficult to achieve without the considerable funds necessary to enable them to then reach a higher percentage of farmers.

Regarding the "possibilities of changing the conventional agricultural framework or substituting it with agricultural development," we think it necessary to state that this is not possible in most developing countries because it has bearing on three vital sectors at the same time.

- *Political*: supposing the country in question has a structural framework that includes this category of technicians (basic staff) who are not primarily trained in extension techniques, the government of that country will not easily make the political decision to abolish them as a basic echelon.
- *Technical*: supposing the technological level of the country's farmers is sufficiently high to require a higher technical level of the extension service specialists who work in the villages, this will not automatically result in an easier task for the local development counsellors because in this kind of situation it is implied that the *development phase* as preextension phase, *has already been passed.*
- *Psychological*: the utilization of basic extension specialists is the result of observations made in most of the countries where agriculture is in the subsistence stage and where technical assistance is given to small family units working the soil. It follows that work methodology in a farm environment is much more effective when practical demonstrations precede the technical training sessions, because these are more apt to catch popular imagination. This means that the first contact, even before development, should be made by someone with an agricultural background, capable of explaining the technical reasons behind the demonstrations. This brings us to the need for creating associations of producers, a need that the book makes clear. It is not easy to organize lasting associations of this kind, which would be recognized and supported by the administrative structures, since only endogenous associations seem to have good possibilities of survival. The centres are somewhat artificial, and popular support, which would make them viable, is missing.

In conclusion, we would like to stress the importance of works of this kind. In addition to the exactness of its theoretical statement, it considers the predominant cultural system of the rural world and knows how to find concrete solutions to the complex problem of the farmer's social promotion.

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Patriarchy is alive and well

by Else Skjønsberg

So far the patriarchal view has been predominant in development aid. What has been exported to the developing countries is not only capital and technology, but also plenty of ideology. The patriarchal ideology considers the world populated with males. Women are their auxiliaries. It is the males who matter and what is good for the male is supposed to be good for his family. At the receiving end, the males have been quite pleased with this ideology to the point of opposing the few attempts made at including women in their own right in the modernization process.

It isn't that women haven't got their development projects. They do. But "the relative unimportant role attributed to women's participation is reflected in the make-up of the budgets of development projects. Women's programmes generally receive a low proportion of overall budgets; and in many instances, when funds run out, the first to suffer from budget cuts are those related to women's programmes."[1]

There are two main types of aid where women are directly concerned. One type aims at the improvement of living conditions through the increase of social services. It is usually small scale, cheap and unproblematic, as health projects and training in the field of home economics challenge no power structures. On the contrary, through such projects, women's role as homemakers is strengthened, but whether sex role patterns confining them increasingly to the home is good for society and for the women themselves is rarely debated.

The other type of aid aims at introducing new and often very different modes of production and the goal is to change existing economic structures. Industrialization, mechanization and modernization in agriculture and fishing are typical areas of investment.

The target population for the second type of aid is mainly men. Women get their share, it is thought, by virtue of being wives, daughters and perhaps also mothers. Jobs and increased incomes raise status and power — male status and male power. Men's lives are modernized, but women, who are not target groups, continue carrying out their traditional tasks as their mothers and often grandmothers did before them.

What then are women's traditional tasks? Unfortunately, the answer is, among other things, food production. In Africa, even today, about 70 percent of all peasants are women. On a world basis, estimates indicate that women make up about half of the agricultural labour force. Yet, virtually all aid in the field of agriculture has been and still is aimed at men.

The real target group

Agricultural extension services have been offered men, who have been defined as target groups both for formal and informal training programmes; cooperative schemes have been formed by and for men; men have been encouraged and helped to adopt improved seeds, fertilizers, insecticides and improved tools. Credit facilities have been made available almost only to men, and they have been encouraged, and at times forced, to take up cash-crop cultivation. But when Ugandan women started growing cotton on their own initiative, they were forbidden to do so.

As cash crops bring money, the male is in the position to consolidate his new economic role through investing his income in better equipment and more seed. But increased family income doesn't necessarily mean improved status for all.

In many instances, modernization has added new burdens to women's traditional work but without concomitant rewards. The use of modern machinery made available to men has resulted in an increase in the acreage under cultivation. It is the woman's job to weed the fields, but the profit goes to the man. The introduction of livestock and poultry schemes, without supplying water, means that women have to carry more water than before.

Where men give priority to cash crops, women have had to shift subsistence cultivation to less fertile fields requiring more labour input for the same output. Increased schooling for the young of the family means that the women in particular have to do without the help of their offspring in providing water and in looking after the smaller children.

One might ask, aren't the women fortunate *not* to have to be the earner of the family? But such a question overlooks the fact that increased cash economy based mainly on income provided through male labour makes women more dependent economically. And this development is not only contrary to women's productive role, but also to the responsibility women in many parts of the world have toward the maintenance of themselves and their children. The men claim a larger part of the family income as theirs, and spend money on prestige objects and recreation, whereas women would first consider the needs of the family. This is partly the reason that cash crops and wage employment lead to a deterioration of the family's nutritional standard.

Increased financial dependence on male earners has also caused a substantial male migration. In 1969, every third rural household in Kenya was headed by a woman. It is the priority given male employment that has caused this major breakup of families. In industry, as in agriculture, women are given few opportunities. For the women who remain in the countryside without a male partner, the work burden and family responsibility increase. Those who accompany their men to town find that neither in the traditional nor in the modern sector of productivity is there any work for them. Industrialization and modernization do not only leave little room for women, but even threaten them in their traditional fields of activity. In Ghana 80 percent of the traders were women, but traditional trade is losing ground to modern commercial enterprises where they only make up 24 percent of the labour force.[2] Women in traditional production are unable to compete with supermarkets and power looms.

The reason that modernization is still aimed at only one sex must be sought in

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the monopoly men have in virtually all areas of decision making pertaining to aid, both on the donor side and on the receiving side. But the sectorial thinking, so frequently present in the planning and the implementation of aid, is also to be blamed. The failure to look upon society as a whole, made up of innumerable but closely interrelated parts, has been unfortunate not only for women but for development itself. The mobilization of men all over the world has not been able to bridge the growing gap between food production and the population increase. Probably, it will not do so in the future because it is women's role in production and in reproduction that is pivotal.

Sectorial thinking

What has production in common with reproduction? The connecting link between these two vital areas of human activity lies in the concept of status. What development aid and concomitant modernization have meant for women particularly, is first a relative decrease in productivity in comparison to men, and decrease in relative productivity equals loss in status. Here we must make an allowance. In societies characterized by extreme exploitation of women, any new resources made available to women will improve their condition as well as their status. But as politics, religion and bravery are areas of activities normally closed to them, they usually get status only through their role in production and in reproduction. All over the world, mothers of many children can claim respect and prestige. The reasons behind this are real enough. Though a burden, fertility is also an important asset for women. With increasing dependency on a male wage earner, children guarantee the durability of the husband's economic responsibility toward the family. Later in life, the children themselves are potential economic assets. At least some of them might get education, jobs, adequate income. As long as women continue being engaged in labour-intensive and time-consuming types of production yielding little reward, children are the only means available to them to raise their status.

From this perspective, it is not surprising that the tremendous efforts put into family planning have had little overall impact. Sectorial thinking has prevented the incorporation of the close relationship between modes of production, number of children and female status. So far women are offered few alternatives to their much rewarded roles as mothers. But, if women s productivity were to increase, childbearing would no longer be their main or only means of obtaining security and prestige. Status also relates to attitudes, and women's traditionalism is closely connected to their low status.

How then, can women's marginal role in development be altered? The answer seems to lie in a holistic approach to development aid. Important elements like women's status, fertility, attitudes and productivity must be recognized as interrelated parts influencing one another in a reciprocal relationship of causes and effects. The maintenance of life through productive work, however, must be given priority and taken as a point of departure, also because a strategy for growing more food cannot overlook women's traditional and potential role in food production. Planners and economists tend not to take this immense contribution to production into account. If suitable substitutes for traditional labour methods were supplied, women's time and energy would be freed for more rewarding types of production. But increased female productivity in agriculture also warrants that women are given access to the same tools of development that hitherto have been made available mainly to men.

The patterns of male superiority and female subordination are being created and maintained all the time. So also in aid. The important contribution women do make in both production and reproduction and can make in the future — provided opportunities are made available — calls for renewed and increased attention. A balanced development presupposes active participation both by men and women.

●

[1] Participation of Women in Rural Development Programmes. FAO, *WS/E5494, 1973.*
[2] *E. Boserup,* Women's Role in Economic Development. *George Allen & Unwin, London, 1970.*

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Else Skjønsberg *has been working on a Norwegian development project in Sri Lanka, with particular emphasis on the women's situation.*

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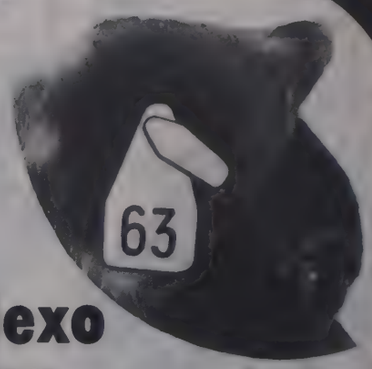

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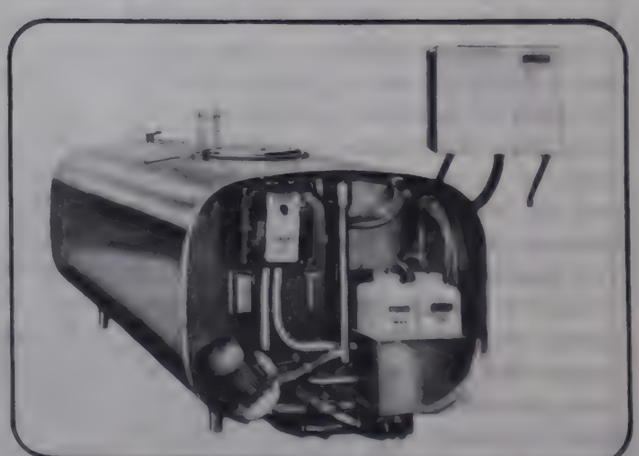

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A false doctrine

by M.A. Zaman

Abundant labour supply in the agricultural sector of developing countries is usually taken for granted. However, this assumption does not take into account the physical condition of the labourers. Y.M. Cho notes that, "in terms of calorie and protein intake, people in these countries consume roughly 30 to 40 percent less than those in economically advanced countries." They are, therefore, physically unable to work hard.

A day is usually broken up into three periods: eight hours to sleep, eight hours off work and eight hours at work. Implicit in this is the assumption that a person is adequately fed and well nourished. He thus gets the required amount of energy from exogenous sources for his 24-hour day. His endogenous source of energy does not have to provide for any of this daily routine. If this crucial assumption is not realized, the conventional time periods cannot be maintained for long. If there is a shortfall in calorie intake, the periods have to be revised in such a way as to spend more time on those activities requiring the least calories per hour. At a given time, if the availability of energy from exogenous sources is limited, it is necessary to conserve as much energy as possible for work without drawing upon the endogenous source. In Bangladesh, it was found that there was an average calorie deficiency of 106 per farm worker: therefore a labourer could not work at the present nutritional standard without eventually impairing his health.

The average deficiency in calorie intake indicated above does not mean that the people cannot work eight hours a day for some time. They can. After burning out the energy from the exogenous sources, they will be drawing energy from endogenous sources, such as glucose, protein and fat of body tissues. These are essential for maintaining health. But they are exchangeable for temporary use as energy through a complex chemical process within the human body. However, they must be replenished soon. Unless this is done, a person suffers from malnutrition. The end result will be lack of enterprise, unhealthy life and premature death.

The per caput food supply may not improve in Bangladesh even if the output of food grains per acre is doubled by 1985 because the population increase could neutralize the gain. It is realistic, therefore, to reallocate the 24-hour period so as to avoid any supplementary supply of energy from the human body itself or at least keep such supply at the minimum level to follow the daily routine.

A series of calculations was made to revise the conventional allocations of time, each revision gradually requiring less energy from the human body itself. The requirements of children were kept unchanged and the time spent off work unaltered. The variables were, therefore, time spent in bed and time spent at work. It is time spent in bed that requires the least calories per hour (for a given body weight). Therefore, to increase the time in bed is the most economical way of conserving the scarce supply of energy from exogenous sources for doing work. As the number of hours in bed was increased from 8 to 12 hours, the average deficiency of calorie intake fell from 106 to 2.

Under static conditions

In an overpopulated calorie-deficient country, as Bangladesh is, there is a shortage of effective labour supply even though there is an abundance of labourers. Hence, one should avoid equating labourers with labour in such countries. Under static conditions, the true measure of surplus or deficit labour is not the number of available workers but the hours of work they can do in a day. It seems that twenty hours' work a week constitutes full employment for a labourer in Bangladesh today.

Bangladesh is a good example to show the dramatic effect that an improvement in nutritional level would have on the labour supply. If the average calorie availability could be increased by some 26, the working week could be increased by five hours for the present labour force. Three studies were made, based on 20, 25 and 30 hours of work a week respectively. The first estimate shows there is an apparent deficiency of 1.98 million labourers in Bangladesh, whereas the other two indicate that an increase in average calorie availability by some 26 and 52 per day could turn the deficiency into a surplus of 3.10 million and 6.15 million respectively. The first estimate justifies Y.W. Schultz's comment that the notion of surplus labour in agriculture of poor countries under static conditions, is a "false doctrine." But the other studies show that there may be considerable potential surplus labour in agriculture if the nutritional level were only slightly higher.

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M.A. Zaman *joined FAO in 1970 and is working in its integrated rural development programme.*

LETTERS

Making it clear

Sir,

Readers of the article "Energitis" (*ceres*, Nov.-Dec. 1974) may be puzzled by its structure, which seems to suggest that it is an extract from a longer and more coherent paper. This piece, which was published without my knowledge, was not prepared as an article. It is instead the first few pages of a book called *World Energy Strategies: Facts, Issues, and Options*, which was serialized in the May and June 1974 issues of the "Bulletin of the Atomic Scientists." A revised and updated version is being published this spring in the United States by Ballinger and Friends of the Earth; the 1974 Swedish edition has gone through several printings, and other editions (including French) are in press.

As its title implies, the book is far broader in scope than the excerpt you printed, and includes a comprehensive survey of energy sources, uses and strategic options. I am glad that the book has been brought to the notice of *ceres* readers, as it is relevant to many of their concerns, but I wish you had made it clear that you were presenting as an article an unedited excerpt from a book.

Amory B. Lovins
London

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Correction

In "The balance sheet of dependence" by Sam Cole (*ceres*, Nov.-Dec. 1974), page 26, column 3, line 24 should read *$2 000 billion*, not *$2 million*; page 27, column 3, line 2 should read *$500 million*, not *$500 thousand million*. (Ed).

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